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Winnemucca District Office
Winnemucca, Nevada

August 1998

Final Environmental Impact Statement

TRENTON CANYON PROJECT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific and cultural values.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Winnemucca Field Office
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445
702-623-1500

In Reply Refer To:
1793/3809
NV-020

August 7, 1998

Dear Reader:

This Final Environmental Impact Statement (FEIS) for Newmont Gold Company's Trenton Canyon Project, prepared by the Bureau of Land Management (Bureau), Winnemucca Field Office is submitted for your review and comment.

The FEIS is based on a Plan of Operations submitted to the Bureau under 43 CFR 3809. This FEIS analyzes the direct, indirect and cumulative impacts associated with the continued mining with expansion of the North Peak and Valmy deposits and commencement of mining in the Trenton deposit. The FEIS also analyzes impacts related to new haul roads, overburden disposal areas, additional heap leach facilities, widening of the primary access road, and additional ancillary facilities.

The Proposed Action and the No Action alternatives are analyzed, as well as backfilling alternatives and alternative configurations for overburden disposal areas. The Plan of Operations and technical reports in support of the plan, the Draft EIS (DEIS), and FEIS are available for review at this office. Supporting materials referenced in the FEIS are also available for review at the Bureau's Nevada State Office, 850 Harvard Way, Reno, Nevada.

Comments were received on the DEIS during the 60-day comment period, which ended April 14, 1998. Public meetings were held on the DEIS in Winnemucca and Battle Mountain, Nevada on March 18 and 19, 1998. This FEIS is in abbreviated format and responds to comments received on the DEIS, as well as provides additional information and corrections to the DEIS. To review the FEIS it will be necessary to refer to the DEIS. You may direct questions to Rodney Herrick, Project Manager, at the above address or phone number.

Comments on this FEIS will be accepted until the close of business September 14, 1998. Written comments should be directed to Rodney Herrick, Project Manager, Bureau of Land Management, Winnemucca Field Office, 5100 East Winnemucca Boulevard, Winnemucca, Nevada, 89445. A Record of Decision will be issued following the public comment period on this FEIS.

Sincerely yours,

for Michael R. Holbert
Acting Field Manager

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FINAL
ENVIRONMENTAL IMPACT STATEMENT
TRENTON CANYON PROJECT

Lead Agency:	U.S. Department of the Interior Bureau of Land Management Winnemucca Field Office
Project Location:	Humboldt County, Nevada Lander County, Nevada
Comments on this Final EIS Should be Directed to:	Rodney Herrick, EIS Project Manager Bureau of Land Management Winnemucca Field Office 5100 East Winnemucca Boulevard Winnemucca, Nevada 89445 (702) 623-1500
Date Final EIS Filed with EPA:	August 14, 1998
Date by Which Comments should be received by the BLM:	September 14, 1998

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This Final Environmental Impact Statement (FEIS) analyzes the impacts that would occur with the implementation of Newmont Gold Company's (Newmont) *Plan of Operations* for the Trenton Canyon Project (BLM Case #N20-96-002P). The Trenton Canyon Project is composed of mining operations at three distinct deposits: North Peak (T32N, R42E, Sections 1, 11, 15), Valmy (T33N, R43E, Sections 20, 21, 29, 31, 32) and Trenton Canyon (T32N, R43E, Sections 7,18, 19 and T32N, R42E, Section 13). The portion of the Valmy and North Peak operations on private land are currently permitted and would be expanded under the proposed project. The proposed Trenton Canyon deposit mining operations would include 8 open pits; 6 overburden disposal areas; diversion channels and ancillary facilities; and improved access. The Valmy deposit would include expansion of the pit and construction of heap leach facilities. The incremental surface disturbance for modifications of permitted facilities and for new activities within the Proposed Action would be approximately 1,480 acres, including 633 acres of public land administered by the BLM. The potential environmental impacts associated with the proposed mining of the Trenton Canyon deposit and expansion of the Valmy and North Peak mining areas (Proposed Action), the No Action Alternative, the Expansion of TC-6 Alternative, the Rehandling of TC-4 and TC-5 Alternative, and the Partial Sequential Backfill Alternative are presented within this FEIS.

Responsible Official for EIS:

for Michael R. Holbert
Winnemucca Acting Field Manager

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Summary

SUMMARY

Santa Fe Pacific Gold Corporation (SFPG) submitted a Plan of Operations for the Trenton Canyon Project in March 1996 to expand their currently permitted operations on private lands at Valmy and North Peak deposits and to conduct mining in the Trenton Canyon deposit. In May 1997, Newmont Gold Company (Newmont) merged with SFPG and is currently operating all of the former SFPG mines. Based upon responses received during the review of surface management under 43 CFR Subpart 3809, the Plan of Operations was revised in October 1997.

The Trenton Canyon Project is located in Humboldt and Lander counties approximately 12 miles south of Lone Tree Mine, which is 34 miles east of Winnemucca, Nevada and 18 miles west of Battle Mountain on Interstate 80 (I-80). The Trenton Canyon Project is accessed via the Stonehouse Interchange (Exit 212) on I-80 (Figure 1-1). The Trenton Canyon Project area is located on the northwestern flank of Battle Mountain, in the Trout and Cottonwood Creek hydrographic basins.

Newmont's proposal is to expand mining operations from those currently permitted on private lands onto public lands, administered by the Bureau of Land Management (BLM). Therefore, the review and approval of Newmont's Plan of Operations is subject to compliance with the Federal Land Policy Management Act and with the associated BLM surface management regulations (43 CFR Subpart 3809). The BLM has determined an Environmental Impact Statement (EIS) is necessary to evaluate the potentially significant impacts of the Proposed Action and alternatives. The Nevada Division of Wildlife, Department of Conservation and Natural Resources has provided information and review capacity regarding wildlife as a cooperating agency in the preparation of this EIS.

PURPOSE AND NEED

The purpose of the Trenton Canyon Project is to allow Newmont to use its existing work force, mining equipment, and ore processing facilities to produce gold from additional reserves occurring on lands near Newmont's currently permitted operations at North Peak and Valmy deposits. The project need is reflected by the demand for gold that has been identified in the national and global markets. Gold is an established commodity with international markets. Uses include investments, a standard for monetary systems, jewelry, electronics, and other industrial applications.

SCOPING AND PUBLIC INVOLVEMENT PROCESS

The purpose of this EIS is to evaluate reasonable and practical alternatives which meet the purpose and need for the Project as it responds to the requirements of the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) of 1969 (40 CFR Parts 1500-1508) and the Department of the Interior's guidance in the BLM's NEPA Handbook (H-1790-1).

The scoping process for this project consisted of early agency consultation by SFPG during which project concepts and alternatives were developed. A Notice of Intent to prepare an EIS for the Trenton Canyon Project, Humboldt and Lander Counties, Nevada was published in the Federal Register on September 12, 1996 (Vol. 61, No.178). A public scoping meeting was held in Winnemucca, Nevada, on September 24, 1996, and a public notice was issued soliciting comments during a 30-day comment period from September 12 to October 15, 1996. Additional meetings were held with regulatory agencies during preparation of the Draft EIS (DEIS). The consultation and scoping process resulted in the identification of the following major issues:

- Potential impacts to wetlands and fill into wetlands or Waters of the United States,
- Protection of species of concern and their habitat known in Humboldt and Lander Counties,
- Conforming open pit safety/securing method(s) to the requirements of NAC Chapter 513 following completion of mining,
- Protection of sage grouse and sage grouse strutting grounds,
- Protection of birds habitats, mule deer summer habitat, upland game habitat, wildlife water sources, fisheries resources, raptor habitat, and bat species common throughout the Battle Mountain and Winnemucca areas,
- Preservation of a small seep at the mouth of Trenton Canyon essential to the local upland game and nongame wildlife,
- Preservation of riparian habitat for valley quail populations in the Cottonwood Creek drainage,
- Protection of the Cottonwood Creek trout population by sediment control,
- Livestock access to and from waters and grazing on the Badger Ranch in the North Buffalo allotment near the Trenton Canyon project. Avoid livestock reduction because of fenced out and disturbed lands,
- Mitigate traffic on the access roads in order to avoid safety hazards to cattle and livestock,
- Avoid loss of grazing capacity (i.e. reduction in grazing permit) and fiscal losses.

A 60-day comment period was held following release of the DEIS on February 13, 1998. Public hearings on the DEIS were held during the comment period on March 18 and 19, 1998 in Battle Mountain and Winnemucca, Nevada respectively. The close of the DEIS comment period was April 14, 1998. A 30-day comment period will be held following release of this FEIS. The comment period ends on September 8, 1998. Following the FEIS, the Record of Decision will be issued and there will be a 30-day appeal period.

EXISTING AND PERMITTED FACILITIES

The existing facilities and permitted activities are primarily on private lands at Valmy and North Peak deposits, but public lands are used for corner crossings of water and communications lines, power lines, and road rights-of-way. Existing and approved facilities at North Peak and Valmy mining areas include:

- Two open pits,
- One heap leach facility and process overflow pond at North Peak mining area,
- Three overburden disposal areas,
- Access and haul roads,
- A water/communications line that is the sole water source for existing facilities,
- A power line,
- Ancillary facilities, and
- Exploration drill sites and access roads.

PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The Proposed Action includes the expansion of the existing approved facilities and the addition of new facilities (Figure 2-3). The existing approved facilities to be expanded and/or modified include the Valmy pit, the North Peak pit, two overburden disposal areas, the heap leach facility, the access road, and other ancillary facilities. The new proposed facilities include the open pit mining area at Trenton Canyon deposit, 11 overburden disposal areas, two heap leach facilities, and other ancillary facilities. In addition, exploration activities would continue to be conducted. Existing approved disturbance includes 336 acres of public lands and 866 acres of private lands for a total disturbance of 1,202 acres. The incremental surface disturbance for modifications of permitted facilities and for proposed new activities includes 633 acres of public lands and 847 acres of private lands for a total disturbance of 1,480 acres. Total disturbed acreage would include 969 acres of public lands and 1,713 of private lands for a total disturbance of 2,682 acres.

Alternatives Considered but Eliminated

Use Cottonwood Creek as the Overburden Disposal Area for the Trenton Pits - This alternative was eliminated from further consideration because risks to water quality and the impacts to riparian resources, wildlife, and fisheries could be high, as Cottonwood Creek is the principal habitat of that type in the project area. This alternative results in more than minimal impact and would have required a Section 404 Individual Permit from the U.S. Army Corps of Engineers under the Clean Water Act of 1973 and significant design modifications to maintain flows within the creek bed.

Haul Leach Ore to Lone Tree Mine for Processing - This alternative was identified during scoping to evaluate using existing heap leach facilities instead of constructing and operating the two additional heap leach facilities proposed near the Valmy mine area. Due to the design and operating criteria required by the state of Nevada water pollution control regulations and operating permits, the risk of pollution at the proposed Valmy heap leach facilities is low.

The total cost of production would be greater due to increased haul costs and upgrading the access road to support mine haulage equipment. The increased costs associated with the longer haul would be economically prohibitive. This alternative, which includes additional hauling, would result in increased emissions, noise, and wildlife impacts as well as safety concerns.

Establish One Centralized Heap Leach Pad - The original mine plan concept included a single location for the heap leach facility near the center of the project area in Section 1, T32N, R42E. This location had benefits because it was on the main access road to the Lone Tree Mine and it eliminated the need (and cost) for developing two separate heap leach facilities. With the proximity to both Trout and Cottonwood creeks this alternative would not provide substantial environmental benefits.

Total Backfill Alternative - The total backfill alternative would use overburden material to fill the mined pits. This alternative would reduce surface disturbance impacts and would not leave unreclaimed surface area (i.e., the open pits) following mining. Overburden would either be placed into temporary stockpile areas or into an adjacent mined pit. Overburden placed into temporary stockpile areas would require re-handling to return the material to the original pit. In order to plan for pit backfilling, a pit must be completely mined out and fully evaluated for potential future mining.

Approximately 75 percent of the overburden material would be placed into temporary stockpile areas and would require re-handling. Re-handling material requires higher operating costs. The increased costs associated with re-handling this material would be economically prohibitive for these deposits. This alternative would prolong the time to complete reclamation and would result in increased emissions and noise impacts from material re-handling.

Underground Mining - To reduce surface disturbance impacts, underground mining of the Trenton Canyon deposits instead of open pit mining was reviewed as an alternative. Underground mining has higher initial capital and operating costs than open pit mining and typically only becomes practical when extracting deep, high-grade ore. The ore within all three mine areas (i.e., North Peak, Valmy and Trenton Canyon) is primarily low-grade oxide ore.

Reduced Size of Mining Alternative - The project purpose and need identifies gold production from reserves for national and international markets. A reduced size of mining alternative would result in a mine plan in which gold resources would not be fully recovered and would conflict with the defined purpose and need. Further, this alternative does not allow the project proponent to exercise its legal rights to recover marketable mineral resources under applicable provisions of the Mining Law of 1872.

Modification of Mining Rate Alternative - The Trenton Canyon Project Plan of Operation identifies a mining plan that provides for extraction of the gold ore as quickly as is operationally feasible. While several pit benches may be worked concurrently, the number of benches at the Trenton Canyon Project that may be mined at one time is limited due to the small size of these pits. A mining plan that would allow for a longer operating time period would not reduce the potential impacts when compared to the Proposed Action.

Alternatives Evaluated in Detail

In addition to the No Action alternative, alternatives to the Proposed Action were developed in response to the issues and concerns identified during the scoping process. These issues focused primarily on potential slope stability hazards, cumulative impacts of surface disturbance to wildlife habitats and other resources, and protection of the Cottonwood Creek drainage and riparian resources.

No Action - The currently permitted activities at the Valmy and North Peak mine areas and the permitted exploration activities within the project area, represent the "No Action" Alternative. This involves construction, operation, reclamation, and closure of the approved facilities on private lands and use of federal lands for access at both Valmy and North Peak mining areas as stipulated by the State of Nevada and BLM.

Expansion of TC-6 to Eliminate TC-4 and TC-5 - The objective of this alternative is to identify an alternate location for the overburden that was proposed to be deposited in drainage basins on the west side of Cottonwood Creek. All elements of this alternative would be identical to the Proposed Action except that overburden designated for disposal in areas TC-4 and TC-5 of the Trenton pit area would be disposed in area TC-6.

Partial Pit Backfill Alternatives - Two partial pit backfill options were formulated to protect downslope resources, improve aesthetics, and reduce surface disturbance.

Rehandling of TC-4 and TC-5 - The objective of this alternative is to use material in areas TC-4 and TC-5 as pit backfill following completion of the mine sequence.

Partial Sequential Backfill - This alternative would effect the partial backfilling of certain mine pits with overburden that becomes available during the planned mine development sequence, and it would potentially reduce the total area of mine disturbance, reduce or eliminate some overburden disposal areas, reduce the reclamation effort for the overburden disposal areas, maximize the total amount of land reclaimed to beneficial use, and reduce potential sedimentation to Cottonwood Creek. The feasibility of this alternative would depend on a variety of factors including economics and the flexibility of the mine to lend itself to backfilling.

Agency Preferred Alternative

In accordance with NEPA, the lead agency is required by the Council on Environmental Quality (40 CFR 1502.14) to identify its preferred project alternative in the EIS. The BLM's preferred alternative is the Proposed Action with the partial sequential backfill alternative and implementing appropriate mitigation for each significant potential resource impact.

AFFECTED ENVIRONMENT

Surface Water - Surface water quality in the project vicinity is generally good. Concentrations of some constituents in surface water at the project site exceeded Nevada surface water quality standards for aquatic life and agriculture. Constituents with exceedences at a number of locations and times were lead and phosphorus. Those with isolated exceedences were total suspended solids, copper, mercury, molybdenum, selenium, silver, and zinc. The level of exceedence for these constituents was generally low.

Groundwater - Groundwater flow within the project area is toward the northwest, reflecting local topography. The principal hydrostratigraphic units in the study area are: 1) a shallow unconfined system of isolated perched water zones in Quaternary Alluvium and shallow bedrock; and 2) a deep unconfined system located in heavily fractured bedrock. Groundwater levels are below the lowest elevation of all the proposed pits. Groundwater quality upgradient of the ore bodies is fairly good, with documented exceedences of the manganese drinking water standard. Downgradient water quality exceeds several drinking water standards.

Hazardous Materials - Sensitive areas for hazardous materials release would include riparian zones along the Cottonwood and Trout Creeks, and areas with direct pathways, usually airborne, to humans, wildlife, or aquatic life.

Geology and Minerals - The project includes three deposits: the Trenton Canyon, the Valmy, and the North Peak. These gold deposits are structurally controlled and hosted in sedimentary rocks. Kinetic humidity-cell testing indicates that most rocks from the three deposits had an average pH greater than 6.5.

Air - All four sub-basins within the project area are considered to be PM_{10} attainment areas by the Nevada Bureau of Air Quality. The four sub-basins are designated as unclassified for other criteria pollutants (nitrogen oxides, sulfur dioxide, carbon monoxide, and ozone). The major sources of air emissions in the project area are from the North Valmy Station coal-fired power plant, and emissions from the Marigold and Lone Tree mines, including vehicular traffic on unpaved roads.

Soils - The study area consists of three major landform types: 1) mountains; 2) foothills; and 3) fan piedmonts. The area soils vary widely, ranging from shallow soil and rock outcrops in the highland reaches to deep alluvial loamy soils in the valleys. The total volume of topsoil available for future reclamation activities would be approximately 1.6 million cubic yards (approximately 7 inches of topsoil).

Vegetation and Special Status Plant Species - Six major vegetation cover types were identified within the Trenton Canyon Project area. The Wyoming big sagebrush, mountain big sagebrush, low sagebrush, and black sagebrush types occur on foothills and mountains. The salt desert shrub type occupies lower elevations associated with alluvial fans. Greasewood occurs at elevations between 5,000 and 5,200 feet in areas of high alkalinity with shallow groundwater. No threatened, endangered, or candidate plant species have the potential to occur within the project area.

Two plants with cultural value were collected in the higher elevation areas of the Trenton Canyon project area: Douglas rabbitbrush (*Chrysothamnus viscidiflorus*) has both medicinal and spiritual value for the Western Shoshone. Buckwheat (*Eriogonum caespitosum*) is used as a salve or as an eye medicine.

Wetlands and Riparian Habitat - Approximately 2,125 feet along the upper reach of Cottonwood Creek (29 acres) and areas along Trout Creek that occur as wet meadows (9 acres) were delineated as jurisdictional wetlands. Two springs that occur in the south half of Section, 20, T33N, R43E, were also delineated as jurisdictional wetlands. Mud Spring is calculated to be 3 acres; an unnamed spring covers approximately 2 acres. Ames Spring, located between Sections 16 and 21, T33N, R43E, also supports a wetland area of approximately 8 acres.

Ten stream reaches totaling 14.11 acres were identified as Waters of the United States. These areas include reaches of Cottonwood and Trout Creeks and also included a number of tributaries of these drainage systems that contain flow only in response to storm-event runoff or snow melt. The wetlands identified in upper Cottonwood Creek can be classified as a *Populus tremuloides/Salix* c.t. ecological type, one of the recognized riparian communities of Central Nevada (Forest Service, USDA 1996). The Trout Creek riparian ecological type is a dry grass meadow with a trough-shaped drainageway that has been disturbed by grazing along much of the length.

Riparian habitats are variously dominated by chokecherry, willow, and elderberry, with occurrences of aspen. Of these species, willow is classified as obligate wetland or facultative wetland (FWS 1988). Larger overstory trees such as cottonwood are generally lacking in the riparian habitats of the project area. Cottonwood and Trout creeks support high quality aquatic and riparian habitats, representing the most complex and diverse ecosystems in the project area. Cottonwood Creek is characterized by an aspen overstory with a shrubby midstory and understory of grasses and forbs.

Wildlife, Fisheries, and Special Status Animal Species - The number and diversity of animal species within an area is determined by the diversity of vegetation types. Overall, the diversity of vegetation communities in the project area is not great either in structure or composition, with other limiting factors of surface water and riparian vegetation. Wildlife resources of the project area consist of a variety of small, relatively inconspicuous species of mammals, birds, amphibians, reptiles and fish. Larger species that inhabit the area include mule deer, coyote, badger, bobcat, mountain lion, and several species of game birds and raptors.

Several special status species are present within northern Nevada, however, few of these are documented within the project area. No species federally listed as threatened or endangered were identified in the area, nor does suitable habitat exist for such species. Eight mammal, three bird, and one amphibian species were identified by the USFWS as species of concern that potentially occur within the project area. Of these species of concern, only goshawk has appropriate habitat available in the project area. This habitat is not presently being used.

Range - The project area encompasses parts of the North Buffalo and Copper Canyon livestock grazing allotments. Both allotments are administered by the Battle Mountain BLM Field office. Three permittees are licensed for livestock grazing within the two allotments: the Badger Ranch, the Agri-Beef operation, and the Ellison Ranching Company.

Recreation - BLM lands in the project area are managed for dispersed recreation including upland game hunting, off-highway vehicle (OHV) use, and rockhounding. No developed campgrounds or day-use areas are present within the project area. However, the Mill Creek Recreation Area is located approximately 15 miles south-southeast of the southern Battle Mountain Range and Water Canyon is less than ten miles southeast of Winnemucca. Recreation opportunities near Mill Creek include camping, deer, and upland bird hunting, fishing, mountain biking, hiking, geologic sightseeing, and rockhounding. Water Canyon offers picnicking, bird watching, hiking, and camping. The year-round stream supports a lush riparian environment.

Land Use and Access - Land ownership in the project area is a "checkerboard" of public and private land. Federal lands are administered by the BLM; private lands are owned or controlled by SFPG. Public lands within the two counties are managed for "multiple use," which allows mineral exploration, mining, livestock grazing, wildlife management, recreation, and other uses. Land uses within the study area include mining facilities and mining claims, grazing allotments and range improvements, energy and communications facilities, transportation systems and dispersed recreation. Mining and mineral exploration are the major land uses in the study area and will likely remain so for decades. There are no incorporated towns or rural residences within the study area.

Visual - The landscapes in the project area are characterized by open, expansive views and minimal overstory vegetation. The characteristic landscape is distinguished by isolated, roughly parallel mountain ranges separated by broad valleys draining northeast toward the Humboldt River. Surrounding the base of the mountains and extending into the broad valleys are distinctive alluvial areas.

The peak, north-facing and east-facing slopes, of the Battle Mountain were rated by BLM for their scenic quality in the early 1980s as level B (some common and some outstanding features), however because of ongoing mining and other activities the scenic quality is rated as level C (fairly common). The west-facing slopes of Battle Mountain, lower Cottonwood Creek, and the Buffalo Mountains are all rated as Scenic Quality level C. Interstate 80 is classified as a moderate sensitivity viewpoint when considering both use volume and user attitude. The study area is all within Visual Resource Management (VRM) Class III and IV.

Noise - Noise generated by trucks, bulldozers, and other equipment typically ranges from 85 to 90 dBA at 50 feet. Sound levels from blasting range from 115 to 125 dBA at 900 feet. This noise is a relatively short-term percussive sound. The nearest residential area is the town of Valmy, Nevada, approximately 6 miles north of the Valmy mining area and as far as 13 miles from the North Peak and Trenton Canyon mining areas.

Social and Economic Values - The project area's history and development are distinguished by its relatively narrow economic base and dependence on mining, agriculture, gaming/tourism, and transportation. Large-scale gold mining is the dominant economic activity in the region, which has prospered from the influx of skilled workers and expansion of mining support services and supply industries. Most of the workforce for the Trenton Canyon Project reside in the communities of

Winnemucca and Battle Mountain, where the mines procure a significant share of their operating supplies and services. The towns are characterized by a core of commercial businesses and civic facilities surrounded by traditional residential neighborhoods, which give way to new tracts of conventional and mobile home developments and commercial developments.

Cultural Resources - The project area was used both by Northern Paiute and Western Shoshone. A total of 152 prehistoric or historic cultural resource sites have been recorded in the study area. Twenty-seven have been determined to be National Register of Historic Places eligible, four multiple component sites are present at which either the prehistoric or historic component is eligible, the eligibility of three sites is listed as pending or unevaluated, and the remaining 118 sites have been determined not to be eligible.

ENVIRONMENTAL CONSEQUENCES

Impacts were identified and described as being direct or indirect, adverse or beneficial, and short-term or long-term for each environmental resource. The context and expected intensity of impacts are also defined.

Surface Water - Cottonwood Creek is the receiving water for the Trenton Canyon mine area and Trout Creek is the receiving water for the Valmy mine area. The North Peak mine area drains to the north and west and has no receiving watercourse. Constructing and operating the mining facilities, including pits and stockpiles within the studied watersheds could potentially alter flows within established waterways due to diversion channels, have long-term reduction in surface water runoff and watershed area due to mine pits, and change surface runoff characteristics due to surface disturbance. Water quality impacts may result from long-term meteoric water infiltrating through stockpiles, increased sediment loads due to erosion from roads, stockpiles, and disturbed surfaces, and potential spills, leaks, or overflows from a heap leach facility or other mining activities. Neither the Trenton, North Peak nor Valmy pits would require pit dewatering; therefore, there would be no discharge to surface water as a result of the Proposed Action, the No Action or alternatives.

Under the No Action Alternative, runoff from the watershed draining into the existing permitted area within the Valmy drainage areas would be diverted to avoid run-on into the open pits or stockpiles. The total area removed from the watershed during operation would be the heap leach and overflow pond plus the pit, or approximately 105 acres. The disturbed area that could lead to increased runoff is approximately 198 acres. The total area removed from the watershed after reclamation would be approximately 34 acres.

Land used for open pits, process ponds, and heap leach pads under the Proposed Action would produce no runoff during mining and reclamation. As in the No Action Alternative, roads, pipelines, diversions, and ancillary facilities would produce greater runoff during mining but would approximate natural conditions following reclamation. Runoff characteristics would change because of varying drainage characteristics based on slope and intensity of precipitation compared to natural areas.

Under the Proposed Action, the total area removed from the watershed during operation is approximately 592 acres. The total area removed from the watershed following reclamation is approximately 387 acres. No change would occur to channel geometry, and the risk of sedimentation would be minimized by design features and management practices as proposed in the Plan of Operations and Reclamation Plan.

Infiltration of meteoric waters through the proposed overburden disposal areas within the Trenton Canyon, North Peak and Valmy mine areas are not expected to impact surface waters.

Surface water quantity impacts under the Expansion of TC-6 to Eliminate TC-4 and TC-5 alternative would be similar to the Proposed Action. A 25-acre increase in aggregate surface area of the overburden disposal areas could potentially lead to an increase in estimated long-term seepage from the overburden disposal areas. Given the small overall flow, the predicted water quality for this alternative would not be materially different than that described for the Proposed Action. Erosion would be reduced from the overburden disposal area slopes in this alternative.

Under the rehandling alternative, there would be no long-term effect to surface water quality from infiltration of meteoric waters through TC-4 and TC-5 to surface water quality as these materials would be within a pit and any seepage would contribute entirely to the groundwater. The surface expression of flow through TC-3 and TC-6 would be negligible and dispersed. There would be the same potential for sediment loading to riparian areas and aquatic habitat during mining. In addition, the risk would remain for a longer period of time compared to the Proposed Action because of having to re-handle the overburden from TC-4 and TC-5 back into the pit.

The Partial Sequential Backfill of Trenton Canyon Pits Alternative would include construction of some overburden disposal areas in the pits rather than on the natural surface. There would be no diversions required for the disposal areas within the pit; therefore, run-off effects and alteration of drainage could be 100 - 300 acres less than under the Proposed Action, depending on the final configuration. Less surface disturbance implies less risk of erosion; however, the sedimentation risks within the Proposed Action would be minor because of the proposed protection measures which are part of the Plan of Operations and Reclamation Plan. Therefore, this alternative's surface water impacts would be similar to the Proposed Action.

The Proposed Action and alternatives would not require any discharge to surface water and flow and run-off characteristics would not be measurably different from the existing condition. There would be no residual adverse effect on surface water quality within the project area under any of the action alternatives.

Groundwater - The Proposed Action, No Action and each of the other alternatives have similarities of construction and operation which would result in similar groundwater effects. No additional water supply would need to be developed, and there is no expected pit dewatering required under any of the alternatives. Some surficial weathering of pit walls and overburden disposal areas would occur under any of the alternatives, potentially resulting in metals leaching into the groundwater.

Mine process water for all of the project alternatives would be necessary to support the existing permitted facilities, but would be less than 1,500 gpm, the amount projected for use during full operation of the Trenton Canyon Project. This would have no direct impact on groundwater because the process water is supplied from the Lone Tree Mine dewatering well system, which would continue to function regardless of the decision to permit the Trenton Canyon Project.

Indirect impacts of any alternative could include the potential for groundwater degradation as a result of toxic or hazardous chemical release from the North Peak heap leach facility, storage tanks, or transportation routes. Engineering and construction controls, Spill Prevention, Control and Countermeasure (SPCC) Plans, Emergency Response Plans (ERPs), and employee safety training minimize the risk of a release and provide direct immediate remedial activity to limit the size of the release.

Based on the rock type analytical results which indicated mostly low sulfur content and elevated carbonate, the potential for impact due to sulfur oxidation and acid release appears to be minimal. Weighted ANP/AGP were in the range of 4.9 to 30.4, and it can be concluded that the potential for metal leaching due to acidic conditions is extremely low for tested overburden material and pit excavations under any alternative.

Long-term effects of the Proposed Action include the potential change in groundwater chemistry due to the infiltration of precipitation through the overburden disposal areas and pit excavations. The predicted overburden disposal area leachate concentrations are well within the drinking water standards except for sulfate where the predicted concentration was 1059 mg/L compared with the maximum secondary standard (for public water supply) of 500 mg/L. Other alternatives would have similar effects on groundwater.

Hazardous Materials - Direct and indirect impacts would be experienced by the Proposed Action, the No Action Alternative, and the Action Alternatives in the event of a release of hazardous substances to the environment. The likelihood of such impacts is low. The releases could occur during transportation to and from the project, or from use or storage of the materials on the project site. The environmental effects of a release would depend on the substance, amount, timing and location of the release. Hazardous materials releases could reach sensitive receptors, primarily via migration through air and water transport mechanisms. The impact of hazardous material exposure to sensitive receptors ranges from slight, transient effects to severe chronic systemic dysfunction or death. In general, the two materials of greatest concern are diesel fuel and sodium cyanide. Due to the anticipated rapid response and cleanup of a diesel or sodium cyanide spill, long-term exposures in soil or groundwater are not expected.

All hazardous materials would be handled in accordance with applicable Mine Safety and Health Administration or Occupation Safety and Health Administration regulations. The hazardous substances to be used in the Proposed Action, the No Action, or the alternatives would be handled as recommended in the manufacturer Material Safety Data Sheets. No residual adverse effects or irreversible and irretrievable commitment of resources are anticipated.

Geology and Minerals - The Proposed Action, the No Action, or alternatives would create direct impacts on geologic and mineral resources. Impacts would be limited to excavation and relocation of overburden, ore processing and removal of gold. A direct impact to the geologic resources from mining would result in an irreversible and irretrievable commitment of resources. The gold would be irretrievably removed from the geologic resource but would remain in circulation indefinitely. Disturbances associated with the Proposed Action, the No Action, and the action alternatives could potentially result in direct impacts on paleontological resources if present. If fossils are discovered during mining activities, the operator would contact BLM to determine the procedures necessary for recovery or avoidance of fossil remains.

Air - The primary issue related to air quality is the increase in fugitive particulate and fugitive gaseous emissions related to construction, operation, closure and reclamation phases of the Proposed Action, the No Action, or the alternatives. The potential air emissions were estimated using air dispersion modeling from the Lone Tree Mine Project. As a result of this modeling it was concluded that emission releases from the Proposed Action, the No Action, or the alternatives would not cause significant degradation to the ambient air quality in the vicinity of the project area.

Mining, ore-processing, and construction activities associated with the Proposed Action, the No Action, or alternatives would be a source of particulates that are 10 microns or smaller in diameter (PM_{10}), and hazardous air pollutants (fine airborne metal dust as components of particulate matter and as components of volatile organic compounds). Gasoline and diesel-powered vehicles and equipment and fuel storage would be primary sources of gaseous pollutants such as sulfur dioxide (SO_2), oxides of nitrogen (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). Particulate emissions could potentially result in temporary decreases in visibility near the operations, especially during dust storms. The only point source of particulate emissions would result from handling of lime during ore processing.

Soils - Soil resources would be impacted directly in areas where the soil surface is disturbed. Soil resources would also be impacted indirectly as a result of potential increased runoff from disturbed areas. Reclamation activities for the Proposed Action, the No Action, or any of the alternatives could require close to 12 inches of topsoil to cover the overburden disposal areas, roads, heap leach pads, and pond areas at a sufficient depth for successful vegetation growth. Under the Proposed Action, the No Action, or the alternatives, the amount of available soil salvaged from disturbed areas would be less than necessary to achieve the desired cover depth. Alternate sources of growth medium would need to be developed to make up for the shortage. The Proposed Action or the alternatives would result in alterations of the natural topography and changes to the short-term erodibility and suitability of soils for use as a medium for growing plants. Reclamation activities, which would include grading and revegetating slopes, however, would promote the long-term reestablishment of soil and plant communities to the impacted areas. A smaller area of soil disturbance would occur under the No Action Alternative.

Vegetation and Special Status Plant Species - Direct impacts are those which would result in the loss or removal of vegetation due to the construction of facilities and haul roads, pit development, and overburden disposal. Indirect impacts include the degradation of vegetation due to trampling and soil compaction. Both of these types of impacts would only be expected to occur in those areas already permitted for facilities and mining operations or would be expected to be included as part of the Proposed Action or alternatives. Short-term loss of habitat would result in those areas where facilities would be removed and revegetation is planned following closure of the mine. Long-term loss of vegetation would occur in the vicinity of the pits, which would not be backfilled or revegetated. Under the Proposed Action, the No Action, or the alternatives there would be the opportunity for noxious weeds to invade and establish, which would change the composition of native vegetation communities. Revegetating disturbed areas and controlling these potential invasions through careful monitoring are the principal means of mitigation. The proposed revegetation plan would be expected result in establishing stable communities that would be able to sustain wildlife and livestock levels comparable to pre-mine conditions. No plant populations of listed threatened, endangered, or candidate species, BLM sensitive species, or habitat thereof are within the boundary of the Proposed Action, the No Action or the alternatives.

Under the No Action Alternative, the construction of facilities for existing mining activities would result in the loss of less vegetation during the life of the current operations than under the Proposed Action or alternatives. Under the No Action, vegetation at the proposed Trenton Canyon mine area would remain in its present condition.

The Expansion of TC-6 to Eliminate TC-4 and TC-5 alternative would result in the surface disturbance of 25 acres more than that estimated for the Proposed Action. Vegetation types that would be affected by the enlargement of TC-6 would be generally similar to those affected by TC-4 and TC-5.

Under the Partial Sequential Backfill of Trenton Deposit Pits alternative, impacts would be reduced, as compared to the other alternatives, as a result of the reduction of disturbed surface areas (i.e., overburden disposal areas). This would reduce the impacts to vegetation due to the decrease in the destruction of plant habitats and areas that would have to undergo reclamation. This would in turn reduce the potential for invasion by noxious weed species.

Wetlands and Riparian Habitat - There would be no direct impacts to wetlands as a result of the Proposed Action, the No Action, or the alternatives. Indirect impacts for all alternatives could result from interference with drainage into the wetlands, water source degradation within the project area as a result of sedimentation, especially during earthmoving activities, or from input of toxic materials as a result of an accidental spill or leak. The jurisdictional wetlands with the most potential to be affected by the proposed alternative include Mud Spring and Ames Spring.

The Proposed Action, the No Action, or other project alternatives would result in alterations of the natural topography and changes to the short-term erodibility of soils. Some reduction in wetland function is possible as a result of fill activities and altered stream flows. Riparian areas near overburden disposal areas TC-4 and TC-5 may potentially be impacted. The extent and intensity of such impacts will be minimized by the erosion and ground and surface water hydrology mitigation measures.

Wildlife, Fisheries, and Special Status Animal Species - No significant impacts have been identified as a result of the Proposed Action or the other project alternatives. Proposed activities under any of the alternatives may result in the loss or degradation of habitat for wildlife. No springs would be directly removed under any of the alternatives. Most of the types of impacts on wildlife would occur with any of the alternatives; however, the magnitude and intensity of the effects would vary between the Proposed Action, the No Action, and the alternatives.

Possible effects on wildlife and wildlife habitat include decreased forage and cover, reduction in prey base due to decreased vegetative habitat, the creation of barriers to wildlife movement, increased human presence in the area, and risks from the presence of cyanide or other hazardous materials. Some species may use the area more frequently because the fences exclude hunters and forage is not grazed.

Open pits and overburden disposal areas may fragment habitats and create a barrier to wildlife movement. Traffic on the new and upgraded access roads would increase the potential for direct mortality of small animals, such as mammals, birds, and reptiles on a local basis. Roadkill would be minimal because access roads would be located away from the most critical habitats. Loss of smaller animals represents the loss of prey species for predators (i.e., bobcats and coyotes) and raptors (i.e., golden eagles and ferruginous hawks). The probability of animal mortality due to spills or leaks of sodium cyanide or hazardous materials would be extremely low. Under the Proposed Action, the No Action, or the alternatives, there would be residual loss of habitat at the pits for terrestrial wildlife, avian species, and potentially bat species.

Range - Implementing the Proposed Action or the alternatives would have the potential to impact livestock grazing through surface disturbances and through the disruption of livestock watering areas. Surface disturbances of 2,198 acres would result in the loss of approximately 154 animal unit months (AUMs). Following reclamation, the long-term, irreversible, and irretrievable loss of 25 AUMs (Proposed Action) would remain due to the unreclaimed mine pits.

Other impacts that could result from the proposed project include vehicle traffic on access and haul roads, which could result in further disturbance of grazing patterns and trailing operations, the potential for animal-vehicle collisions, and the potential invasion of noxious weeds.

Recreation - The Proposed Action, the No Action, or the alternatives would result in fewer acres available for dispersed recreational use during and after mining. Access to recreation areas or roads and trails used by OHV users would have minor adverse effects. Impacts to wilderness areas or Wilderness Study Areas, or other recreation areas would be negligible.

Land Use and Access - The primary land use impacts associated with the Proposed Action, the No Action, or the alternatives would result from the direct physical conflicts with land uses (e.g., existing mines or mining claims, grazing allotments, OHV/ORV recreation, utilities, transportation systems, ranches and grazing, and rural residences). Under any of the alternatives, land use would continue to change from grazing, dispersed recreation, and wildlife to mining and ore processing. Restrictions to access within the mine expansion area would continue. Land ownership in the project area would remain the same. Public access would be maintained throughout the mining operations and reclamation activities.

Visual Resources - Changes in the landscape that would result from the Proposed Action, No Action, and the alternatives were compared with the characteristic landscape to determine the resulting degree of contrast in form, line, color, and texture in the landscape. Most of the mining activities that would occur under the No Action Alternative would not be visible from key observation points because the North Peak mine area is screened by the surrounding topography. However, exploration roads and drill sites would be noticeable yet not dominant as seen from the key observation points. During and after mining operations, the exploration roads and drill sites would be reclaimed, resulting in reduction of the visual impacts.

The primary impact of the Proposed Action would be contrasts created by removal of the natural landforms, and color contrasts created by removal of natural surfaces and vegetation. The angular forms and horizontal lines typical of mining would moderately contrast with the rolling hills and ridges of the natural landscape. Land clearing and construction of mine facilities would create short term moderate to strong color contrast between disturbed and undisturbed surfaces. The pits and overburden disposal areas for the Trenton Canyon mining area and the overburden disposal area in the Valmy mining area would be the strongest contrasting visual elements. The pits would create a long-term and irreversible visual impact.

The visual impacts of the Expansion of TC-6 to Eliminate TC-4 and TC-5 alternative would be similar to the Proposed Action, as the expanded overburden disposal area TC-6 would be screened by the natural topography of the Trenton Canyon deposit. The visual effects of the Rehandling of TC-4 and TC-5 alternative would be similar to the Proposed Action, as the volume of material within overburden disposal areas TC-4 and TC-5 is not sufficient to completely fill the adjacent pit. For the Partial Sequential Backfill of Trenton Canyon Pits Alternative, if any of the pits that are visible from the key observation points could be completely filled and reclaimed, the visual contrast of the high walls would be weaker.

Noise - Under the Proposed Action, the No Action Alternative, and the alternatives, noise impacts including rock drilling, blasting, loading of overburden and ore, and truck hauling would remain at current levels (42 to 47 dBA) until mining and reclamation activities were completed. The Proposed Action would be similar to the No Action but for a longer duration. The Expansion of TC-6 to Eliminate TC-4 and TC-5 alternative would take place for four to six months longer duration than the Proposed Action. The Partial Backfill Alternatives would be similar to the Proposed Action.

Social and Economic Values - Under a No Action Alternative, the public lands portion of the Trenton Canyon Project would not be mined. Newmont already has approximately one-half of the workforce proposed for the project at work at the North Peak site with construction proceeding on ore processing facilities. If denial of permits forced abandonment of the project, the trends and patterns of social and economic activity discussed in Section 3.16 would continue unaccelerated. Population and employment growth in Humboldt and Lander Counties would be slower than with the project, but not by much.

The Proposed Action and alternatives would enable the balance of the workforce--approximately 65 full-time mine workers plus an estimated 20 short-term construction workers--to be hired (Ford, R. 1996). Applying the employment multiplier coefficients to the projected direct hiring for the Trenton Canyon Project, the 130 total long-term direct hires and the projected procurements of equipment, materials and operating supplies would generate approximately 100 secondary jobs in the two-county project area. An additional 65 secondary jobs would be generated elsewhere in Nevada, mostly in the urban areas of Washoe and Clark Counties. The Proposed Action and alternatives would have relatively small but positive effects on the local economy from the consumption spending of its workers and the procurements of local supplies by the project. The Proposed Action would generate additional property taxes and sales taxes, principally for Humboldt County, since the mine property is, and the majority of its personnel would be, located there.

Cultural Resources - The Proposed Action and other action alternatives would result in the loss of cultural resources that are not National Register eligible. These sites have been recorded to BLM standards and the information has been integrated into local and statewide data repositories. Twenty-one cultural resource sites are located within the footprint of disturbance associated with the Proposed Action. Based on consultation between the BLM and the Nevada SHPO, four prehistoric period resources are eligible for inclusion in the National Register of Historic Places. Impacts to National Register eligible sites would be mitigated through preparation and implementation of data recovery and/or mitigation plans. The proposed project would impact burial markers identified by the Western Shoshone. The BLM has initiated consultation with Native Americans regarding places subject to impact.

Cumulative Effects

Foreseeable activities within the cumulative effects area include mine exploration, development, operation, and reclamation. Mine development and operation would create an additional demand for energy, possibly creating the need for additional rights-of-ways for powerlines or transmission facilities. The disturbed area for present and reasonably foreseeable future mining activities in the region could be as high as 15,271 acres over the next ten years. Existing mines and exploration activities have disturbed or are permitted to disturb 10,008 acres and the future mining activity prior to year 2009 is projected to disturb another 5,263 acres.

The reasonably foreseeable activities at existing mines may include expansion of facilities with new facility designs that may require different uses of the resources. For example, expansion of the tailings impoundment at Marigold Mine could require additional storm water structures to be constructed around the impoundment. Each of these types of changes to an existing mine plan may result in some disturbance to public land or other use of a resource.

The other uses for the lands within the cumulative effects area would remain unchanged. Livestock grazing, dispersed recreation and hunting would continue. Cumulative effects from past, current, and future activities within the area would be expected to water (surface and groundwater), geology and minerals, air, soils, vegetation, wetlands and riparian habitats, wildlife, range, visual, and cultural resources.

Chapter 1

Introduction

CHAPTER 1 - INTRODUCTION

In March 1996, Santa Fe Pacific Gold Corporation (SFPG) submitted the Trenton Canyon Project Plan of Operations to expand their currently permitted operations at Valmy and North Peak deposits, and to conduct mining in the Trenton Canyon deposit. SFPG proposed to expand mining operations from those currently permitted on private lands, held by SFPG, onto public lands located in Humboldt and Lander counties, Nevada. Since the proposed expansion would affect additional public lands administered by the Bureau of Land Management (BLM); the review and approval of the Trenton Canyon Project Plan of Operations is subject to compliance with the Federal Land Policy Management Act and with the associated BLM regulations for surface management (43 CFR Subpart 3809). The BLM determined an Environmental Impact Statement (EIS) was necessary to evaluate the potentially significant impacts of the Proposed Action and project alternatives. The Nevada Division of Wildlife, Department of Conservation and Natural Resources has provided information and review capacity regarding wildlife as a cooperating agency in the preparation of this EIS.

On May 5, 1997, Newmont Gold Company (Newmont) merged with SFPG and is currently operating all SFPG mines. Based upon responses received during the surface management 43 CFR Subpart 3809 review, the Plan of Operations was revised in October 1997.

This EIS responds to the requirements of the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act of 1969 (NEPA) (40 CFR Parts 1500-1508) and the Department of the Interior's guidance as interpreted in the BLM's NEPA Handbook (H-1790-1). The components of this EIS include reasonable alternatives to, and environmental consequences of, expansion of mining at the Trenton Canyon, North Peak, and Valmy mining areas (Trenton Canyon Project).

The Trenton Canyon Project is located in Humboldt and Lander counties approximately 12 miles south of Newmont's Lone Tree Mine (LTM) which is 34 miles east of Winnemucca, Nevada and 18 miles west of Battle Mountain on Interstate 80 (I-80). The Trenton Canyon Project is accessed via the Stonehouse Interchange (Exit 212) on I-80 (Figure 1-1). The Trenton Canyon Project area is located on the northwestern flank of Battle Mountain, in the Trout and Cottonwood creek hydrographic basins. The Lander/Humboldt county line corresponds with the Battle Mountain/Winnemucca BLM district boundary in the southern portion of the property.

The purpose of the Trenton Canyon Project is to allow Newmont to use its existing work force, mining equipment, and ore processing facilities to produce gold from additional reserves occurring on lands near Newmont's currently permitted operations at North Peak and Valmy deposits. The project need is reflected by the demand for gold that has been identified in the national and global markets. Gold is an established commodity with international markets. Uses include investments, standard for monetary systems, jewelry, electronics, and other industrial applications.

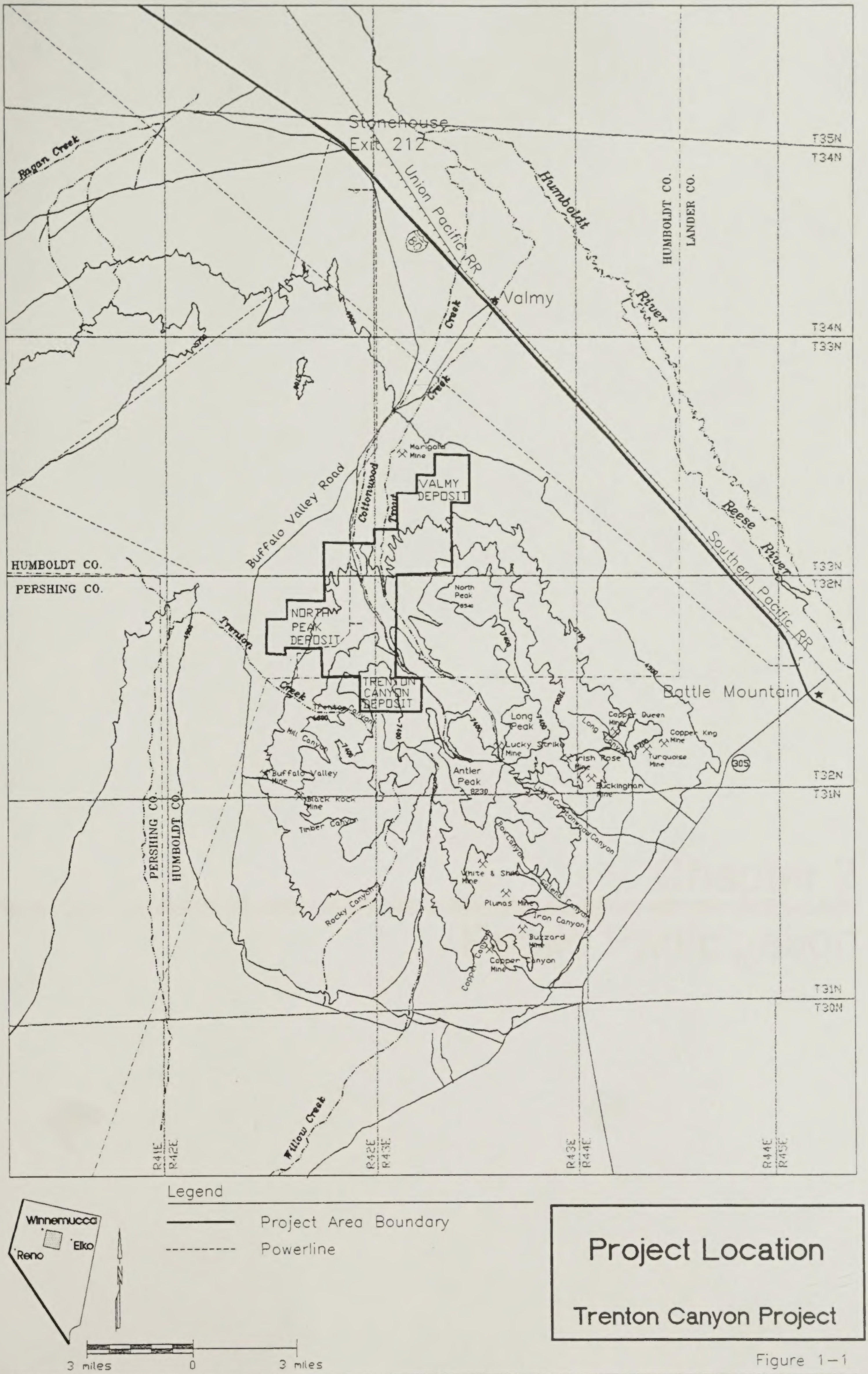
The comment period for the Draft EIS was from February 18, 1998 to April 13, 1998. This Final EIS follows an abbreviated format and is intended to be used along with the Draft EIS during its review.

This Final EIS is organized as follows:

- Chapter 1 is the introduction (above).
- Chapter 2 is a summary of the public involvement activities for the Draft EIS.
- Chapter 3 presents modifications to the Draft EIS.
- Chapter 4 includes the comment letters received on the Draft EIS and the BLM's response to those comments.

AGENCY PREFERRED ALTERNATIVE

The BLM's preferred alternative is the Proposed Action with the partial sequential backfill alternative and implementing appropriate mitigation for each significant potential resource impact. The preferred alternative provides the best balance between environmental protection and effective resource utilization.



Project Location

Trenton Canyon Project

Figure 1—1

October 1997

Chapter 2

Public Participation

CHAPTER 2 - PUBLIC PARTICIPATION

INTRODUCTION

In response to the National Environmental Policy Act of 1969 (NEPA) and the Council of Environmental Quality (CEQ) regulations (1978) for implementing NEPA, appropriate members of the public and federal, state, and local agencies were contacted, consulted, and given an adequate opportunity to be involved in the environmental planning process. Chapter 5 (Consultation and Coordination) in the Draft Environmental Impact Statement (DEIS) describes the public and agency scoping process, the public participation program, the issues and concerns identified from the public and agency comments, and the environmental planning process. This section describes activities of this process that have occurred during the review of the Trenton Canyon Project DEIS and the preparation of the Final Environmental Impact Statement (FEIS).

PUBLIC INFORMATION

During the course of the project, interest request forms were sent to the individuals, organizations, and agencies on the project mailing list. The mailing list included names and addresses from the lead and cooperating agencies' existing mailing lists, as well as all potentially affected public and federal, state, and local agencies, environmental organizations, and individuals. The mailing list was expanded to over 300 interested parties during the process.

A Notice of Availability was published in the Federal Register on February 13, 1998, announcing the release of the Trenton Canyon Project DEIS to the public for review and comment. Information regarding the comment period for the Trenton Canyon DEIS was also given. The Formal Public Meetings were announced indicating where and when the public could comment on the accuracy or adequacy of the Trenton Canyon DEIS.

FORMAL PUBLIC MEETINGS

The purpose of the Formal Public Meetings was to receive views and comments regarding the accuracy and adequacy of the Trenton Canyon DEIS. Two Public meetings were held in March 1998 in Nevada at two locations:

City	Location	Date
Battle Mountain, NV	BLM District Office	March 18, 1998
Winnemucca, NV	BLM District Office	March 19, 1998

The meetings were announced in the Federal Register and published in the DEIS. Press releases were sent out in March 1998 to the Battle Mountain Bugle and the Humboldt Sun, Winnemucca, to announce the public meetings.

Each meeting began with introductions and a presentation given by a BLM representative with project personnel from the BLM, Newmont, and Dames & Moore present. The presentation addressed the project description, purpose and need, alternatives identified, and the project schedule. The meeting then opened up for comments from the public.

A total of 26 people attended the two formal public meetings. There were no comments or questions concerning the Trenton Canyon DEIS at either meeting.

A copy of the Final EIS has been sent to those agencies, organizations, and individuals listed in Appendix F.

Chapter 3

Modifications to the Draft EIS

CHAPTER 3 - MODIFICATIONS TO THE DRAFT EIS

To aid in the federal agencies' decision-making, and facilitate evaluation of significance concerning changes in the Trenton Canyon DEIS, some material contained in the DEIS has been reorganized, and some new information and analysis have been added.

SUMMARY

The Summary printed at the beginning of this document is a reprint of the version from the DEIS. Any modifications or comments received which address the Summary section were incorporated in this FEIS.

CHAPTER 1 - INTRODUCTION

Page 1-1, first paragraph, after first sentence insert: "The Proposed Action, described further in Chapter 2, includes all three of these deposits."

Table 1-1, replace with the following revised Table.

Table 1-1 (Revised)
Major Permits and Authorizing Actions Potentially Required for the Trenton Canyon Project

Authorizing Action	Regulatory Agency
DOT encroachment, FR HU08-HU-0.97	Nevada Department of Transportation
• Approval of Plan of Operations • Road and utility access (ROWs) on BLM-administered land	U.S. Department of the Interior, Bureau of Land Management
• Water Pollution Control Permit • Mine Reclamation Permit • Inclusion in the State of Nevada General Stormwater Discharge Permit for the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory of the Ore Mining and Dressing Non-Point Source Category (Permit No. GNV0022225 • Approval to operate a solid waste system (Class III landfill waiver) • General mining bioremediation facility permit No. GNV041995	Nevada Department of Conservation and Natural Resources; Division of Environmental Protection; Bureau of Mining Regulation and Reclamation
Rolling stock permit	Nevada Department of Conservation and Natural Resources; Division of Environmental Protection; Bureau of Water Pollution Control

Table 1-1 (Revised), Continued
Major Permits and Authorizing Actions Potentially Required for the Trenton Canyon Project

Authorizing Action	Regulatory Agency
Permit to construct a dam (for embankments greater than 20 feet)	Nevada Department of Conservation and Natural Resources; Division of Water Resources
Industrial Artificial Pond Permit	Nevada Department of Conservation and Natural Resources; Division of Wildlife
• Water system approval • Septic system approval	Nevada Division of Health; Bureau of Consumer Health Protection Services
• Building permits • Mine registration form • Special use permit	Humboldt and Lander Counties
Clean Water Act Section 404 Permit (Individual or Nationwide)	U.S. Army Corps of Engineers
401 certification	Nevada Department of Conservation and Natural Resources; Division of Environmental Protection; Bureau of Water Quality Planning
Notification of mine opening or closing	Nevada State Inspector of Mines
• Hazardous Materials Permit • Fire and life safety	Nevada Fire Marshall Division; Hazardous Materials Section
Mine registry form	Nevada Department of Conservation and Natural Resources; Division of Minerals
Blasting/Explosives Permit	Alcohol, Tobacco, and Firearms
Notification of commencement of operation	Mine Safety and Health Administration
Permit to Operate (Air Quality)	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Air Quality
Review Project to Determine Impact on Cultural Resources	Nevada Division of Historic Preservation and Archaeology
Native American Graves Protection and Repatriation Act	U.S. Department of the Interior, Bureau of Land Management
American Indian Religious Freedom Act	U.S. Department of the Interior, Bureau of Land Management

CHAPTER 2 - ALTERNATIVES INCLUDING THE PROPOSED ACTION

Page 2-4, second sentence, 358 acres should be replaced with 307 acres.

Page 2-5, Figure 2-1, revised Figure 2-1 depicts land status changes from comments to the Draft EIS.

PROJECT DESCRIPTION

Page 2-15, Figure 2-3, revised Figure 2-3 depicts land status changes from comments to the Draft EIS.

Page 2-17, Section 2.4.1, first paragraph, first sentence should state that "...open-pit mining of the Trenton Canyon **Project** would result in removal of..." The following Table FEIS-1 outlines estimated ore and overburden material tonnage that would result from the Proposed Action.

Table FEIS-1
Trenton Canyon Project - Estimated Ore and Overburden Tonnage

Deposit	Ore	Overburden	Total
North Peak	3,014,000	7,486,000	10,500,000
Valmy	13,354,000	53,223,000	66,577,000
Trenton Canyon	13,224,000	61,249,000	74,473,000
TOTAL	**29,592,000**	**121,958,000**	**151,550,000**

Page 2-18, Section 2.4.3, Heap Leach Facility, the following sections expand the description of the heap leach facilities to include additional information on leach operation, heap leach pad design, description of liner material and installation procedures, process overflow pond design, details of leak detection and site monitoring systems, and geotechnical stability considerations. A section containing the Nevada Administrative Code Design and Monitoring Standards follows the expanded heap leach facility description.

2.4.3.1 Heap Leach Facility

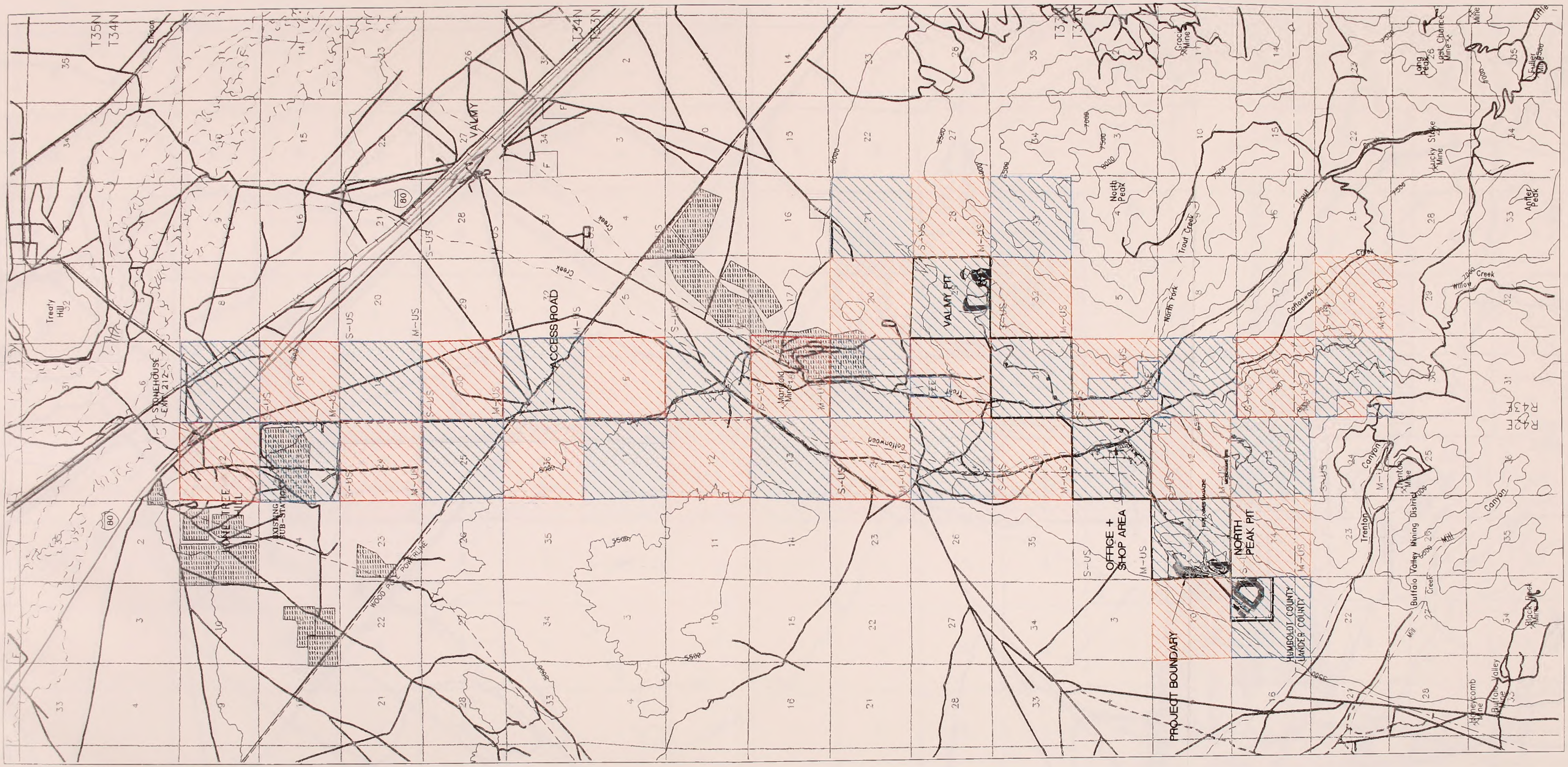
The two proposed heap leach facilities are located in Sections 21 and 29, T33N, R43E. Figure 2-4 and 2-5 of the DEIS show the location of the two proposed, as well as the one existing heap leach facility in Section 15. Only one of the two proposed facilities may be needed, however until engineering designs and investigations are complete, both are shown as part of the Proposed Action.

The ore would be leached using conventional or developing technologies. These heap leach facilities would each be designed and constructed to accommodate approximately 13 million tons of ore. The heap leach facilities would be designed and operated as described in the section below. Reclamation costs have been estimated and are included in the reclamation bond calculations in the Appendix A - Estimate of the Reclamation Costs (Plan of Operations - Reclamation Plan, October 1997).

2.4.3.2 Leach Operation

Ore would be placed on the pads in 25- to 50-foot lifts to a maximum height of approximately 200 feet. The ore would be stacked with approximate average overall slopes of 2.5H:1.0V (ratio of horizontal distance to vertical distance). The ore heaps would be leached by irrigation with a diluted cyanide solution. Solution would be applied to the heaps using drip emitters or sprinklers. The gold would dissolve as the solution percolates through the heaps. The gold-laden (or "pregnant") solution would flow down-gradient along the top of the pad liner to a collection area.

The pregnant solution would be collected in a pregnant tank (approximately 22,000 gallon capacity) at each heap leach facility. The pregnant solution would then be pumped to the carbon column circuit located adjacent to the pregnant solution tank. Loaded carbon from each heap leaching circuit would be transported off site by truck to the Lone Tree Mine or other Newmont mine for gold stripping and final processing. Barren solution exiting the carbon columns would be collected, adjusted with reagents, and reapplied to the heap leach material. The heap leach facilities would operate 24 hours per day, 365 days per year.



LEGEND

THIS MAP IS FOR CONCEPTUAL USE ONLY AND IS NOT TO BE USED FOR DESIGN PURPOSES.

HEAP LEACH
PITS
OVERBURDEN DISPOSAL AREAS
GROWTH MEDIUM STOCKPILE
▦ MINING RELATED DISTURBANCES OF LONETREE AND MARIGOLD MINES

POWERLINE
WATERLINE AND COMMUNICATION LINE
ACCESS ROAD
EXISTING DIRT ROAD
HAUL ROAD
FENCE

*LAND STATUS AS SHOWN IS ONLY APPLICABLE WITHIN THE PROJECT BOUNDARY AND ALONG THE PRIMARY ACCESS AND WATERLINE CORRIDORS FROM LONE TREE.

🟥 PUBLIC LAND
🟦 PRIVATE LANDS

SHADING DOES NOT REFLECT INDIVIDUAL OWNERSHIP OF VARIOUS TRACTS OF LAND.

N

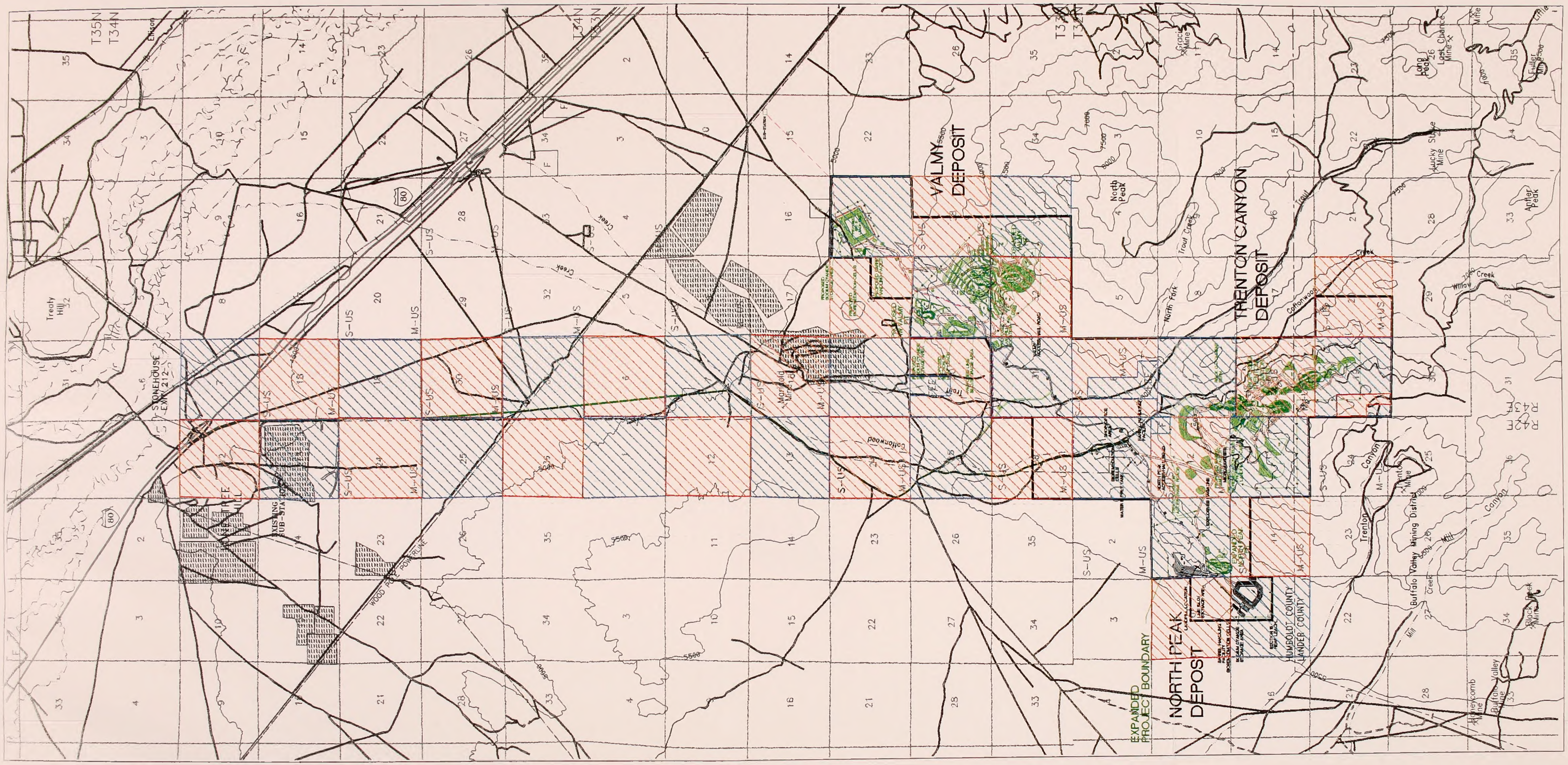
SCALE IN FEET
2500 0 5000

NO ACTION ALTERNATIVE

EXISTING APPROVED FACILITIES
ACCESS ROUTE & FACILITY LAYOUT

TRENTON CANYON PROJECT

ACAD FILE: 3_D_2A.DWG
May 1998 Revised Figure 2-1



LEGEND

THIS MAP IS FOR CONCEPTUAL USE ONLY AND IS NOT TO BE USED FOR DESIGN PURPOSES.

EXISTING APPROVED FACILITIES ARE SHOWN IN BLACK AND PROPOSED FACILITIES ARE SHOWN IN COLOR.

HEAP LEACH
PITS
OVERBURDEN DISPOSAL AREAS
GROWTH MEDIUM STOCKPILES
▨ MINING RELATED DISTURBANCES OF LONETREE AND MARIGOLD MINES

PROPOSED POWERLINE
PROPOSED WATERLINE AND COMMUNICATION LINE
PROPOSED ACCESS ROAD
EXISTING DIRT ROAD
PROPOSED HAUL ROAD
FENCE
PROJECT BOUNDARY

*LAND STATUS AS SHOWN IS ONLY APPLICABLE WITHIN THE PROJECT BOUNDARY AND ALONG THE PRIMARY ACCESS AND WATERLINE CORRIDORS FROM LONE TREE.

▨ PUBLIC LAND
▨ PRIVATE

SHADING DOES NOT REFLECT INDIVIDUAL OWNERSHIP OF VARIOUS TRACTS OF LAND.

N

SCALE IN FEET
2500 0 5000

PROPOSED ACTION

ACCESS ROUTE AND
GENERAL FACILITY LAYOUT
TRENTON CANYON PROJECT

ACAD FILE: 3_D_1.DWG

May 1998 Revised Figure 2-3

2.4.3.3 Heap Leach Pad Design

Information is also provided in this section from the Nevada Administrative Code (NAC) on heap leach design, leak detection system, and monitoring.

The proposed heap leach pads would be designed per the State of Nevada's engineering requirements (NAC 445A.434) using the general design concepts discussed below. Design details comply with NAC 445A.397. Construction would consist of first placing liner bedding material on the compacted fill, followed by placing the synthetic liner. Quality control for liner seaming would be performed by both non-destructive and destructive testing procedures, including air channel, vacuum, and shear and peel tests every 500 linear feet of seam. Leachate collection systems would minimize hydraulic head on the liner.

Crushed ore or waste rock would be placed over the liner prior to stacking of heap leach material to provide a protective layer over the liner. This material would be minus three-quarter inch material, free of clay, friable material, and debris, and would be spread over the liner using light construction equipment.

2.4.3.4 Description of Liner Material and Installation Procedures

The heap leach pad has been designed as a composite-lined system with leak detection. The synthetic liner would overlay a bedding liner of fine grained soil. The bedding liner would be compacted to provide a permeability of less than 1 x 10^{-6} cm/s.

A crushed sand and gravel layer (liner cover fill) would be placed above the synthetic liner as protection from damage during heap stacking operations. This material would be free-draining to allow leachate solution to pass to the collection pipe system. The liner cover fill material would typically have a maximum particle size of 3/4-inch, and would contain less than 7 percent material passing the No. 200 US Standard Sieve size. The liner cover fill material would likely be crushed mine overburden or ore, or natural borrow material crushed and transported to the site.

The solution pond would be constructed with primary and secondary synthetic liners and a leak detection system between the two liners in accordance with NAC 445A.435. Drainage material (usually geonet) would be placed between the two liners to act as a leak detection/leak collection layer. The secondary synthetic liner would be placed on a bedding layer of fine grained material placed on a compacted subgrade.

Before installation of the liner system, the sites of the leach pad and solution pond would be cleared of all brush and stripped of topsoil prior to grading. Visible roots would be removed. Quality assurance and quality control would be provided during construction to assure compliance with engineering specifications for all materials.

2.4.3.5 Process Overflow Pond Design

A process overflow pond would be located adjacent to each heap leach facility. The ponds are designed to meet or exceed the engineering design requirements set forth in NAC 445A.435. The ponds would regularly impound solution and would be double-lined and equipped with leak collection and recovery systems (see details below). These systems would be capable of rapidly transmitting a leak to a collection point. The collection point is designed to facilitate the measurement of fluid volumes and the collection of samples for analysis. The process overflow ponds would be designed to contain, in addition to the normal working inventory of solution, fluid volumes resulting from precipitation and runoff from the heap leach facility during a 25-year, 24-hour storm event, and draindown during a power outage.

Fences would be erected to prevent wildlife from coming into contact with the solution ponds. In addition, monitoring of wildlife mortality would be done to determine the effectiveness of this mitigation. Further wildlife protection measures may be stipulated by BLM or NDOW, if necessary, depending upon the results of the long-term monitoring.

2.4.3.6 Details of Leak Detection and Site Monitoring Systems

The leach pad would be designed with a leak detection/collection system placed below the primary liner in areas of high solution flow such as below collection ditches and below the main solution collection pipes. As previously described, the pond is designed with a leak detection layer sandwiched between the primary and the secondary liner. In the event of a leak in the primary liner, the solution would be collected above the secondary liner and would flow by gravity to a sump. The sump would be regularly monitored for the presence of fluid. In the event of a significant leak, a pump may be used to evacuate fluid from the sump.

2.4.3.7 Geotechnical Stability Considerations

Geotechnical stability analyses were performed for the proposed overburden disposal areas and the heap leach facilities to determine optimum slope configurations for reclamation.

2.4.3.7.1 Methods of Analyses

Stability of the overburden disposal areas and the heap leach facilities were analyzed for both static and pseudo-static loading using limit equilibrium methods. The overburden disposal areas were analyzed for circular failure surfaces and the heap leach facilities were analyzed for both circular and wedge failure surfaces. Using the computer program SLOPE/W (GEO-SLOPE Intl., 1993), the slope stability was computed by the Ordinary Fellenius Method, Bishop's Method, Spencer's Method, and Janbu's Method (resulting factors of safety presented in this report reflect Spencer's Method Analyses). Iterative searches were performed to determine the most critical failure surfaces of the cross-sections analyzed. Minimum acceptable factors of safety used for the analyses were 1.30 for static conditions and 1.05 for pseudo-static conditions (State of Nevada, April 1994).

2.4.3.7.2 Seismic

Slope stability under seismic conditions was modeled using the pseudo-static approach, which applies a sustained horizontal force applied at the centroid of the soil slice to simulate earthquake loading. The horizontal force is based on the unit weight of the soil, the height from the base to the centroid of the soil slice, and the seismic coefficient.

A seismic coefficient of 0.17 was determined for the 100-year return interval for the site based on maps provided by the National Earthquake Hazard Reduction Program (USGS, 1991). This seismic coefficient was used in all pseudo-static analyses for reclamation slope design.

2.4.3.7.3 Strength Parameters Used in the Stability Analyses

The material properties utilized in the analyses were assumed based on: a review of soils strength data from similar sites in the region; soil investigations (RCI, 1995) and boring logs performed by other consultants on soils in the region (WESTEC, 1994); geotechnical literature (Hunt, 1984); and a review of geochemical boring logs prepared by Shepherd Miller, Inc. The assumed parameters used for stability analysis are presented in Table FEIS-2.

2.4.3.7.4 Description of Areas Analyzed

Cross-sections through the overburden disposal areas and the heap leach facilities were analyzed for stability in the areas determined to be most critical. The most critical areas were chosen based on maximum overburden height, steepest subsurface slope, and steepest reclaimed slope.

Analysis of the heap leach facilities were based on design specifications provided by WESTEC's Section 15 Heap Leach Design Report, September 1995.

Table FEIS-2
Assumed Material Strength Parameters

Material	Moist Unit Weight (pcf)	Cohesion (pcf)	Friction Angle (degrees)
Ore:			
Section 21 Heap Leach	128	0	35
Section 29 Heap Leach	128	0	35
Overburden:			
North Peak Area	132	0	32
Trenton Canyon Area	132	0	35
Valmy Area	128	0	35
Liner System	112	0	18
Fill	125	0	30
Foundation (natural ground)	120	0	34

2.4.3.7.5 Results of Analyses

Final reclamation configurations for all areas were designed and analyzed to satisfy the limiting criteria. In order to satisfy the geotechnical and erosional stability criteria, while maintaining access and suitability for revegetation, final reclamation configurations for overburden disposal areas will be limited to the following: south and west facing slopes would have a maximum overall reclaimed slope of 2.6H:1.0V consisting of 10-foot-wide benches for each 50-foot lift, while north and east facing slopes would be constructed to have a maximum overall reclaimed slope of 2.5H:1.0V also consisting of 10-foot-wide benches for every 50-foot lift. Overburden piles with operational slope configurations of approximately 3.0H:1.0V overall would be reclaimed by regrading the inter-bench slopes to approximately 2.9H:1.0V with a minimum of one 10-foot wide bench per 140 feet of elevation change. This configuration would provide an overall slope of approximately 3.0H:1.0V. All heap leach facilities would be reclaimed to 2.3H:1.0V inter-bench slopes with a minimum 10-foot wide bench at each 50-foot lift. This configuration would provide an overall slope of approximately 2.5H: 1.0V.

Table FEIS-3 provides the resulting minimum factors of safety for the cross-sections analyzed using SLOPE/W. All minimum factors of safety for final reclamation slope configurations were considered acceptable according to the minimum allowable factors of safety of 1.30 for static and 1.05 for pseudo-static loading as previously presented.

Table FEIS-3
Resulting Minimum Factors of Safety

Overburden Areas and Heap Leach Facilities	Minimum Factor of Safety (Static/Pseudo-static)
NP2	2.15/1.35
TC1	1.78/1.16
TC2	1.66/1.13
TC3	1.79/1.18
TC4	1.77/1.16
TC5	1.88/1.24
TC6	1.71/1.12
V1	2.20/1.43
V2	2.00/1.28
V3	2.17/1.36
V4	1.88/1.24
V5	2.28/1.40
V6	1.84/1.19
Section 21 Heap Leach	1.66/1.13
Section 29 Heap Leach	1.81/1.12

2.4.3.8 Nevada Administrative Code Design Standards

This section further documents design and monitoring standards in the Nevada Administrative Code (NAC). Following are excerpts from the applicable sections of NAC (Sections 445A.433, 445A.434 - 445A.436, and 445A.440).

NAC 445A.433 Minimum design criteria: Universal requirements; areas where ground water is near surface; proximity of new process components to dwellings; liability for degradation of water.

1. The following minimum design requirements apply to all process components:
   (a) In areas where annual evaporation exceeds annual precipitation, a process component must achieve zero discharge.
   (b) all sources must be designed to minimize releases of contaminants into ground waters or subsurface migration pathways so that any release from the facility will not degrade waters of the state.
   (c) All process components must be designed to withstand the run-off from a 24-hour storm event with a 100-year recurrence interval.
   (d) The primary fluid management system must be designed to be able to remain fully functional and fully contain all process fluids including all accumulations resulting from a 24-hour storm event with a 25-year recurrence interval. The department may require additional containment based on the following factors:
      (1) Proximity to surface water bodies;
      (2) Depth to groundwater; and
      (3) Proximity to population.

   Contingency plans for managing process contaminated flows in excess of the design quantity must be described in the appropriate operating plans.
   (e) The fluid management system must be designed to be functional for 5 years after the projected operating life of the process component and permanent closure period.
   (f) The design of the process components must take into consideration the proposed range of operating conditions for each component and the history of seismic events at the site in order to preclude any differential movement or shifting of the subbase, liner or contained material which endangers primary or secondary containment integrity.

NAC 445A.434 Minimum design criteria: Leach pads and other nonimpounding surfaces designed to contain and promote horizontal flow of process fluids.

Leach pads and other nonimpounding surfaces which are designed to contain, not impound, process fluids and to promote the horizontal flow of process fluids must meet the following requirements:

1. Process fluids must exert only minimal hydraulic head on the liner.
2. Containment of process fluids must consist of an engineered liner system which provides containment equal to or greater than that provided by a synthetic liner placed on top of a of a prepared subbase of 12 inches of native, imported or amended soil, which has a maximum recompacted in place coefficient of permeability:

(a) of 1x10-6 cm/sec; or
(b) of 1x10-5 cm/sec when combined with a system for the detection of leaks which must be located at least beneath those portions of the liner which have the greater potential for leakage. The potential for leakage must be determined by:
  (1) The extent of the hydraulic head exerted on a portion of the liner; and
  (2) The period of time a portion of the liner is exposed to process fluids.

3. If leach pads or other nonimpounding surfaces are located above areas where ground water is considered near the surface, the department may require a liner system with a higher level of engineered containment.
4. When a material or system which provides hydraulic relief is installed beneath a single liner, including, but not limited to, sand, french drains and geotextiles, regardless of the intent of its design, it must function as a leak detection system and include a means for recovering process fluids.
5. Depending on the methods and materials used for their construction, the department may require all open channels which routinely transport process fluids to be traced by a leak detection system.

NAC 445A.435 Minimum design criteria: Ponds.

1. All ponds which are intended to contain process fluids must have a primary synthetic liner and a secondary liner. Between the liners there must be a material which has the ability to rapidly transport any fluids entering it to a collection point which:
   (a) is accessible; and
   (b) has a system for recovering those fluids.
2. When the material between the liners is unable to collect, transport and remove all liquids at a rate that will prevent hydraulic head transference from the primary liner to the secondary liner, the pond must be shut down.
3. Ponds which are primarily designed to contain excess quantities of process fluids that result from storm events for limited periods may be constructed with a single liner if approved by the department.
4. Ponds containing nonprocess fluids may be required to be lined depending on their potential to degrade waters of the state.

NAC 445A.436 Minimum design criteria: Vats, tanks, and other containers which confine process fluids.

Vats, tanks, and other containers which confine process fluids and can be inspected for leaks visually do not require double liners if an area for secondary containment equal to 110 percent of the largest container is provided. Vats, tanks or other containers that are partially buried and cannot be visually inspected must have a system to detect leaks.

NAC 445A.440 Monitoring: Site of facility.

1. The program to monitor the site of a facility must be designed to monitor the quality of all ground and surface water which may be affected by the facility. The type, number and location of the monitoring points must be described in the application as part of the monitoring plan and must be approved by the department.
2. Final monitoring requirements must be established by the department.
3. Baseline data must be collected before operation of the facility.
4. In areas where there is a substantial separation between the process components and the ground water, a system for monitoring highly probably escape pathways in the unsaturated zone may be required by the department.
5. The decision where to locate the monitoring points for the site must be made after considering the site's geology and hydrogeology.

Page 2-18, Figure 2-4. The diversion channel located in Section 32 near overburden disposal area V-5 was inadvertently drawn terminating into a growth medium stockpile; it should be directed between the growth medium stockpile and the overburden disposal area.

Page 2-27, Section 2.4.6 Ancillary Facilities and Utilities, the following paragraphs and a new section, Containment Areas, should be inserted in place of the last sentence in Section 2.4.6.

Bioremediation facilities are used for active treatment of non-hazardous soil contaminated by hydrocarbons from spills which have occurred during mining operations. Additional bioremediation facilities would be located on the overburden disposal areas throughout the project area or near the ancillary facilities. Newmont will apply for coverage under the General Mining Permit No. GNVO41995 for construction and management of the bioremediation facility. The design and operation of the facilities would be consistent with the minimum design criteria specific for bioremediation facilities as set forth in the NDEP publication, "Mining Site Hydrocarbon Contaminated Soil Definitions and Guidelines" (see Appendix B).

Barrel handling facilities would be located near the bioremediation facilities. These facilities would be lined and fenced and would serve as temporary containment for material to be hauled to an approved landfill, recycling facility, or other disposal area.

2.4.6.1 Containment Areas

Reagents and consumables required for operation of the project facilities include, but are not limited to, the following:

- Sodium cyanide (15,000 gallon tank at 30% solution concentration)
- Sodium hydroxide
- Diesel fuel

- Oil (motor, gear, hydraulic)
- Chlorine reagent (for potable H_20)
- Ethylene glycol (anti-freeze)

Diesel fuel and minimal amounts of oil and antifreeze would be stored on portable self-contained skids near active mining areas. The principle diesel fuel and lubricant storage area would be located near the truck shop in Section 1, T32N, R42E. Other facilities associated with the project may include a mobile mining equipment ready-line and various storage areas.

The liquid reagent storage facilities would be provided with secondary containment as required by NDEP and federal regulations (refer to the Nevada Administrative Code requirements in the Expanded Heap Leach Facility Description section in this Chapter). Secondary containment would be sufficient to contain at least 110% of the volume of the largest tank in the containment area.

Page 2-40, Section 2.4.7.8, second sentence should read: "Concrete foundations, basements, walls, and sumps would be broken up and buried at a minimum depth of five feet to prevent interference with plant growth." Insert after second sentence, "The areas would be mounded to promote runoff."

Page 2-41, Section 2.4.7.10, Monitoring and Maintenance, replace this section with the following: "Reclamation monitoring would evaluate the project area for erosion stability and revegetation success. Revegetated areas would be monitored for three full growing seasons after the completion of earthwork and planting. Monitoring would be initiated to evaluate the success of revegetation for the project area as a whole. BLM Instruction Memorandum No. NV-94-026, November 19, 1993, would be incorporated into the reclamation standards for the site.

Vegetation sampling would be performed during the first three growing seasons after seeding. Sampling locations would be randomly selected and the sampling intensity would be conducted at a level to ensure that the plant population is adequately represented from a statistical perspective. All cover data would be collected at the species level to determine if desirable species have been successfully established. In addition, herbaceous reproduction data would be collected, including seed production, vegetative propagation, and the presence of new seedlings.

Plant community development can dramatically fluctuate due to revegetation failures caused by excessive localized erosion, apparent nutrient deficiency, or annual invasion of weeds resulting from unsuccessful seeding. Appropriate maintenance activities for these failures would be determined after a site assessment and may include additional earthwork or re-contouring, supplemental fertilizers, and/or additional seeding as necessary.

To determine revegetation success, the reclaimed areas would be compared to the appropriate reference areas that have plant communities with similar exposures and slopes. Reference areas will be selected by the NDEP, BLM and Newmont, as appropriate to the land ownership, and will include areas with north and east slope exposures, south and west slope exposures, and other native areas similar to reclaimed surfaces. Reference areas would be sampled in the same manner as the revegetated areas.

Reclamation will be considered successful when it meets the State of Nevada's interim standards for successful revegetation. Those standards will be established with demonstration plots to be implemented during mining operations. After three years, areas which do not meet the established criteria would be evaluated, and a decision would be made with the regulatory agency concerning how to best meet the revegetation goal. The proposed reclamation schedule is shown on Table 2-4 of the DEIS.

Berms and signs would be monitored and maintained annually until all reclamation monitoring is completed, and the operator is released from all reclamation responsibility. Permitting the access road widening and realignment would be handled as an amendment to the existing ROW grant."

Page 2-41, Section 2.4.8, add the following as a new paragraph under this section: "Landfills would be operated and maintained according to NDEP regulations and permits specific to the Trenton Canyon landfill. These conditions preclude disposal of liquid wastes, hazardous wastes, petroleum contaminated soils, and any wastes not generated at the Trenton Canyon Project site. Landfills would be constructed and graded to prevent surface water run-on and run-off. Exposure of waste would be minimized by limiting the active portion of the landfill to a single cell at any one time. Waste in the cell would be covered with rock or overburden on a weekly basis. If necessary to prevent blowing debris, the cell would be covered more frequently or a fence would be erected on the downwind side. Inspections would be conducted weekly. At closure of the Trenton Canyon Project, the landfill would be covered with compacted overburden to minimize infiltration, and then the surface would be revegetated."

Page 2-42, Section 2.6.1, third sentence, replace "ravines" with "drainage basins."

Page 2-43, first paragraph, last sentence should be revised as follows: "Environmental benefits of eliminating disposal areas TC-4 and TC-5 include a possible reduced risk of sediment transport and a very minor reduction of visual impacts."

Page 2-54, second bullet, material misspelled.

2.7 Alternatives Considered But Eliminated From Detailed Analysis

Page 2-56, Section 2.7.1, replace the third sentence with the following: "Cottonwood Creek is a jurisdictional Water of the United States and this alternative results in more than minimal impact and would have required a Section 404 Individual Permit from the U.S. Army Corps of Engineers under the Clean Water Act of 1973 and significant design modifications to maintain flows within the creek bed."

Page 2-56, Section 2.7.2 of the DEIS should be revised as follows:

2.7.2 Haul Leach Ore to Lone Tree Mine for Processing (Revised)

This alternative was identified during scoping to evaluate using existing heap leach facilities instead of constructing and operating the two additional heap leach facilities proposed near the Valmy mine area. Due to the design and operating criteria required by the state of Nevada water pollution control regulations and operating permits, the risk of pollution at the proposed Valmy heap leach facilities is extremely low. However, this alternative would eliminate the need for additional heap leach facilities. Leach operations, including storage and handling of sodium cyanide and other reagents, would only occur at the existing LTM and North Peak heap leach operations. The North Peak heap leach facility has approved capacity to process all of the proposed North Peak ore and Trenton Canyon ore. Under this alternative the Valmy ore would be hauled to the leach facility at the LTM heap leach operation. The processing rate at LTM would increase, and would likely require additional infrastructure, including a leach pad expansion.

The haul distance to LTM from the Valmy mining area is 12.5 miles. The total cost of production would be greater due to increased haul costs and upgrading the access road to support mine haulage equipment. The increased costs associated with the longer haul would be economically prohibitive for this deposit. This alternative, which includes additional hauling, would result in increased emissions, noise, and wildlife impacts as well as safety concerns. In addition, because the proposed heap leach facilities would be designed in accordance with NDEP regulation, the alternative would not provide substantial environmental benefits. For these reasons this alternative was eliminated from detailed analysis.

Page 2-57, Section 2.7.4, of the DEIS should be revised as follows:

2.7.4 Total Backfill Alternative (Revised)

The total backfill alternative would use overburden material to fill the mined pits. This alternative was identified in recognition of NAC 519A.250 concerning solid minerals reclamation standards and policy statements outlined in the Federal Land Policy Management Act (PL-94-579, 43 USC 1701) concerning minimization of unnecessary degradation to public land. These standards and policy statements require BLM to review the feasibility of backfilling open pits.

This alternative would reduce surface disturbance impacts and would not leave unreclaimed surface area (i.e., the open pits) following mining. Under this alternative, overburden and ore would be removed from each pit area. The ore would be processed and, depending on the pit development sequence, the overburden would either be placed into temporary stockpile areas or into an adjacent mined pit. Overburden placed into temporary stockpile areas would require re-handling to return the material to the original pit. In order to plan for pit backfilling, a pit must be completely mined out and fully evaluated for potential future mining. There would still be a need to construct permanent overburden disposal areas due to the fact that it would be operationally infeasible to remove some of the overburden material placed in disposal areas with steep natural topography.

Approximately 75 percent of the overburden material would be placed into temporary stockpile areas and would require re-handling. Re-handling material requires higher operating costs. The increased costs associated with re-handling this material would be economically prohibitive for these deposits. Further, the cut-off grade for ore and overburden under this alternative would be higher (higher costs dictate a higher cutoff grade) and a greater amount of low grade mineralization would be left in place. This alternative would prolong the time to complete reclamation and would result in increased emissions and noise impacts from material re-handling. Therefore, this alternative was eliminated from detailed analysis because it would be economically prohibitive, would not maximize the use of the natural resource, and opportunities for future mining of potential mineral resources would be lost.

Page 2-57, addition of Sections 2.7.6 and 2.7.7, both a reduced size of mining alternative and a modification of mining rate alternative have been analyzed and have been eliminated from further consideration in the FEIS.

2.7.6 Reduced Size of Mining Alternative

The project purpose and need (refer to page 1-1 of the DEIS) identifies gold production from reserves for national and international markets. A reduced size of mining alternative would result in a mine plan in which gold resources would not be fully recovered and would conflict with the defined purpose and need. Further, this alternative does not allow the project proponent to exercise its legal rights to recover marketable mineral resources under applicable provisions of the Mining Law of 1872. This alternative would not meet the purpose and need identified in the DEIS and is therefore eliminated from detailed analysis.

2.7.7 Modification of Mining Rate

The Trenton Canyon Project Plan of Operation identifies a mining plan that provides for extraction of the gold ore as quickly as is operationally feasible. The project is comprised of several small open pits, which require sequential mining from the top to the bottom. The time to drill, blast, load, and haul the material from a pit bench, prior to moving lower in the pit, limits this sequencing. While several pit benches may be worked concurrently, the number of benches at the Trenton Canyon Project that may be mined at one time is limited due to the small size of these pits. Therefore, mining the Trenton Canyon Project in a shorter time period is not operationally feasible and was eliminated from detailed analysis. A mining plan that would allow for a longer operating time period would not reduce the potential impacts as compared to the Proposed Action and was therefore eliminated from detailed analysis.

Page 2-59, Table 2-7, Impact Summary and Comparison of Alternatives. On DEIS page 2-59 under the Expansion to TC-6 to Eliminate TC-4 and TC-5 column, Surface Drainage Alteration, replace "< 487 ac" with "Same as Proposed Action." On DEIS page 2-59 under the Partial Sequential Backfill column, Surface Disturbance During Mining, replace "Same as Proposed Action" with "Less than Proposed Action." On DEIS page 2-59 under the Partial Sequential Backfill column, Residual Surface

Disturbance, replace "Approximately 248 ac" with "Less than Proposed Action." Please refer to the discussion of the Partial Sequential Backfill Alternative on pages 2-50 through 2-55 in the DEIS.

On DEIS page 2-60 under the Probable Effect on Surface Water Quality, Proposed Action column, delete "within 500 feet." On the same row under the Expansion of TC-6 column, delete "within 250 feet." On DEIS page 2-60, Discharge of Fill into Wetlands or Other Waters of the U.S., under the No Action column, replace "none" with "0.14 acres." On the same row under the Proposed Action column, replace "1.97 acres" with "2.02 acres." On the same row under the Expansion of TC-6 to Eliminate TC-4 and TC-5 and Rehandling of TC-4 and TC-5 columns, replace "Same as Proposed Action" with "1.97 ac." On DEIS page 2-60 under the Partial Sequential Backfill column, Loss of Habitat for Sensitive Species or Species of Concern, replace "Same as Proposed Action" with "Less than Proposed Action." On DEIS page 2-61 under the Partial Sequential Backfill column, Loss of Habitat for Mule Deer and Sage Grouse rows, replace "Same as Proposed Action" with "Less than Proposed Action;" third row, delete "i.e., Riparian Communities, Seeps, or Springs." Please refer to the discussion of the Partial Sequential Backfill Alternative on pages 2-50 through 2-55 in the DEIS.

CHAPTER 3 - AFFECTED ENVIRONMENT

Page 3-2, Section 3.2.1, Surface Water Quantity, third paragraph, third sentence should be revised as follows: "Reaches of three perennial and ephemeral streams are present within the Trenton Canyon Project hydrology study area: Cottonwood Creek, Trout Creek, and Trenton Canyon Creek."

Page 3-5, Section 3.2.1.2, Water Rights. Revise as follows: "Information on current surface and underground water rights in and near the project area was obtained from the Nevada Division of Water Resources as shown in Table 3-2. As listed in the table, Santa Fe Pacific Gold holds one underground water right in the project vicinity. Water associated with this right is utilized for existing operations. The nearest other groundwater rights are four points approximately two miles north of the project area. There are no active diversion structures associated with surface water rights on the creeks in the project area."

Page 3-6, Table 3-2 should be revised as follows:

Table 3-2 (Revised)
Water Rights in the Project Area

Application #	Owner	Filing Date	Township, Range, Section	Status	Source	Div Rate, cfs	Use	Annual Duty
V03744	Venturacci Ranches	02/82	33N, 43E, 32	VST	Willow Crk	1.00	stock	0
V04636	Venturacci Ranches	02/88	33N, 43E, 20	VST	Ames, Mud Springs	0.50	stock	0
2621	Buffalo Valley Mines Co	01/13	32N, 42E, 26	CER	Mill Canyon Springs	0.16	mining	0

Table 3-2 (Revised)
Water Rights in the Project Area

Application #	Owner	Filing Date	Township, Range, Section	Status	Source	Div Rate, cfs	Use	Annual Duty
3282	Frank Marker	02/15	32N, 42E, 12	CER	Cottonwood Creek	0.3273	irrig	160 af
01898[1]	Frank Marker	05/25	32N, 42E, 12	VST	Cottonwood Creek	NL	irrig	132 af
2216	Frank Marker	09/11	32N, 43E	CER	Trout Creek	0.1661	irrig	61.84 af
2324	Channing Marker	01/12	33N, 43E, 30	CER	Trout Creek	0.1496	irrig	65.04 af
2513	Amelia Marker	09/12	33N, 43E, 16	CER	Desert Springs	0.10	irrig	40 af
10701	G.C. Partee, trustee	05/37	33N, 43E, 30	CER	Trout Creek	0.05	mining	0
51806	Marigold Mining Co., Rayrock Mines Inc.	3/88	33N, 43E, 4	PER	UG	0.45	mining	106 mg
58020	Marigold Mining Co., Rayrock Mines Inc.	8/92	33N, 43E, 4	PER	UG	0.45	mining	106 mg
58021	Marigold Mining Co., Rayrock Mines Inc.	8/92	33N, 43E, 4	PER	UG	0.45	mining	106 mg
58022	Marigold Mining Co., Rayrock Mines Inc.	8/92	33N, 43E, 4	PER	UG	0.45	mining	106 mg
60606	Santa Fe Pacific Gold Corporation	10/94	32N, 43E, 7	PER	UG	0.11	other	60 af

[1] Note: This vested water right (#01898), with 1899 priority, has not yet been adjudicated

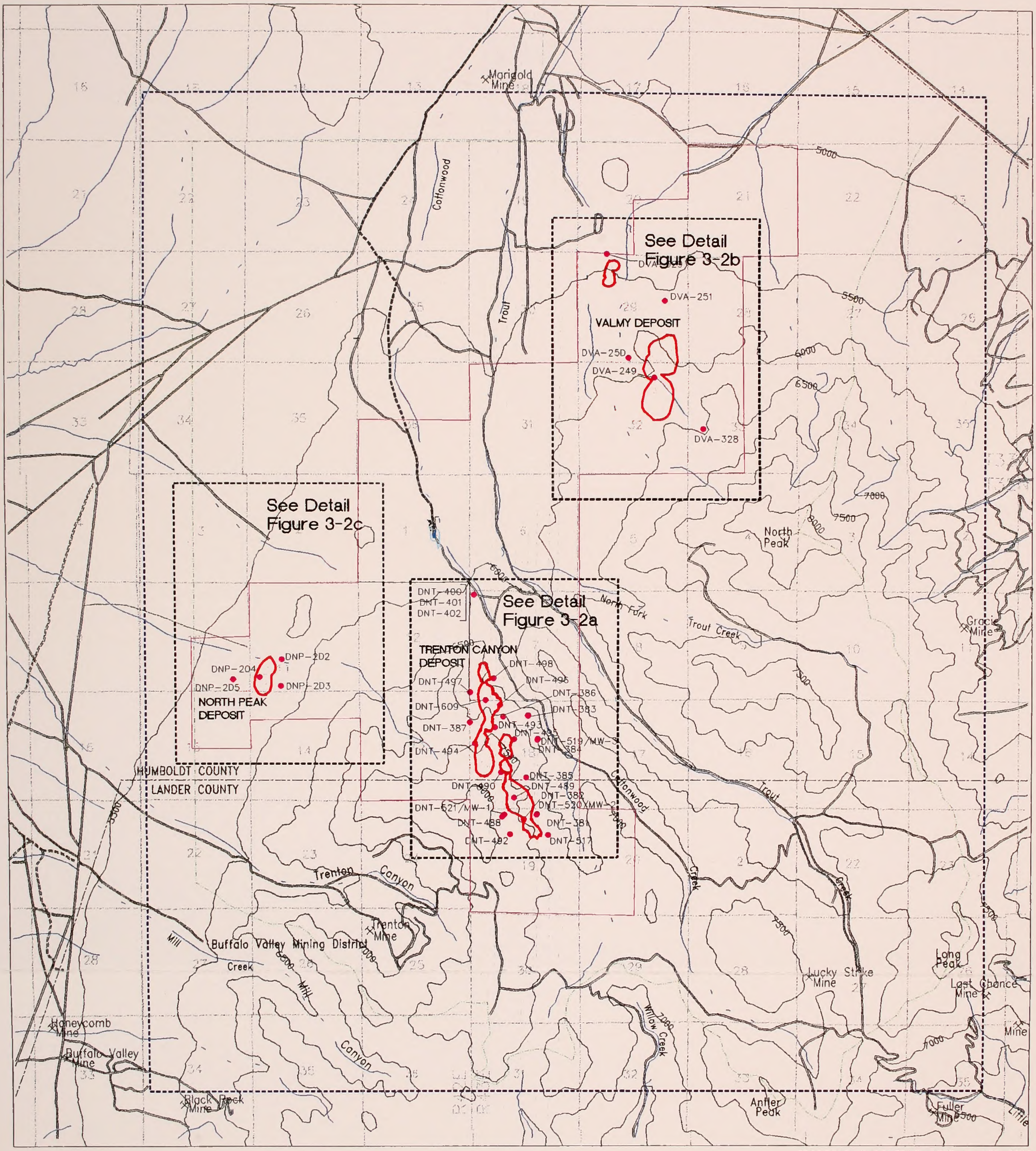
Key: af=acre feet, mg=million gallons, CER=certificated, NL=not listed, PER=perfected, VST=vested, UG=underground, DIV=Diversion, cfs=cubic feet per second.

Source: Nevada Division of Water Resources, Water Rights Database, 1996, 1998.

Page 3-13, Section 3.3, insert the following at the end of the paragraph: "Groundwater rights are discussed in Section 3.2.1.2."

Pages 3-17 to 3-24. Figure 3-2 has been revised to show detail areas added for Valmy and North Peak. Valmy and North Peak borehole and cross section location maps (Figures 3-2B and 3-2C) and cross sections showing water levels and pit bottoms (Figures 3-3A and 3-3B) have also been added to this chapter.

Pages 3-35 to 3-39, A geologic cross section of the Valmy deposit and a cross section location map similar to Figures 3-7 through 3-10 of the DEIS are also provided in this chapter as Figures 3-8A and 3-8B.



TOPOGRAPHIC CONTOUR INTERVAL 100 FEET

LEGEND

THIS MAP IS FOR CONCEPTUAL USE ONLY AND IS NOT TO BE USED FOR DESIGN PURPOSES.

●	BOREHOLE NUMBER
DNT-520/MW-2	(SFPG DRILLHOLE NO./WELL NO.)
--------	STUDY AREA BOUNDARY
——	PROJECT AREA BOUNDARY
	PIT OUTLINE
	GROUNDWATER BOUNDARY

N

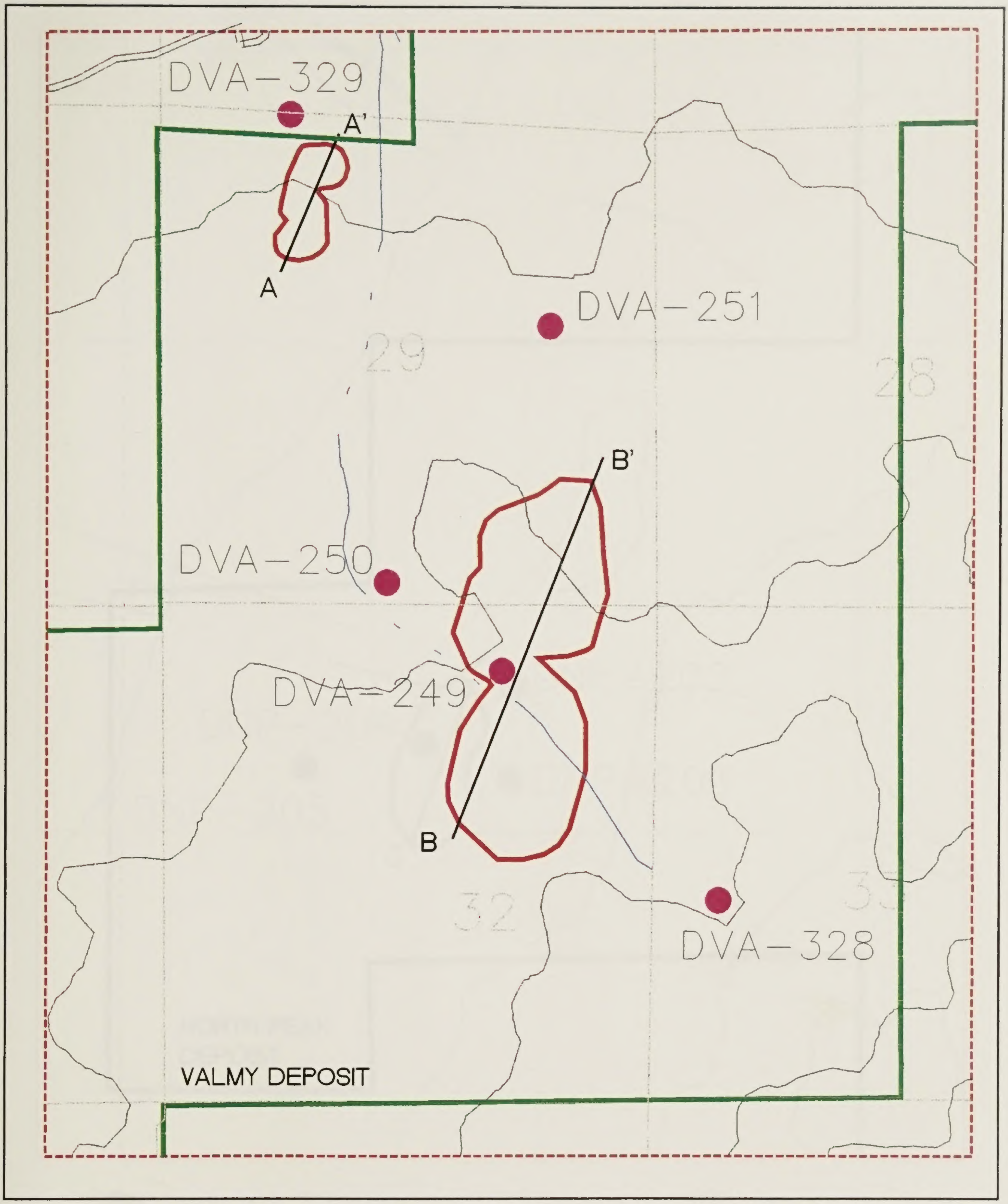
SCALE IN FEET
2500 0 5000

BOREHOLE AND WELL LOCATIONS

TRENTON CANYON PROJECT

JUNE 1998

Revised Figure 3-2



LEGEND

—	PROJECT AREA BOUNDARY
A—A'	CROSS-SECTION LOCATION (SEE FIGURE 3-2)
—	PIT OUTLINE
DNT-520/MW-2 ●	BOREHOLE NUMBER (SFPG DRILLHOLE NO./WELL NO.)
— · —	STREAM

N

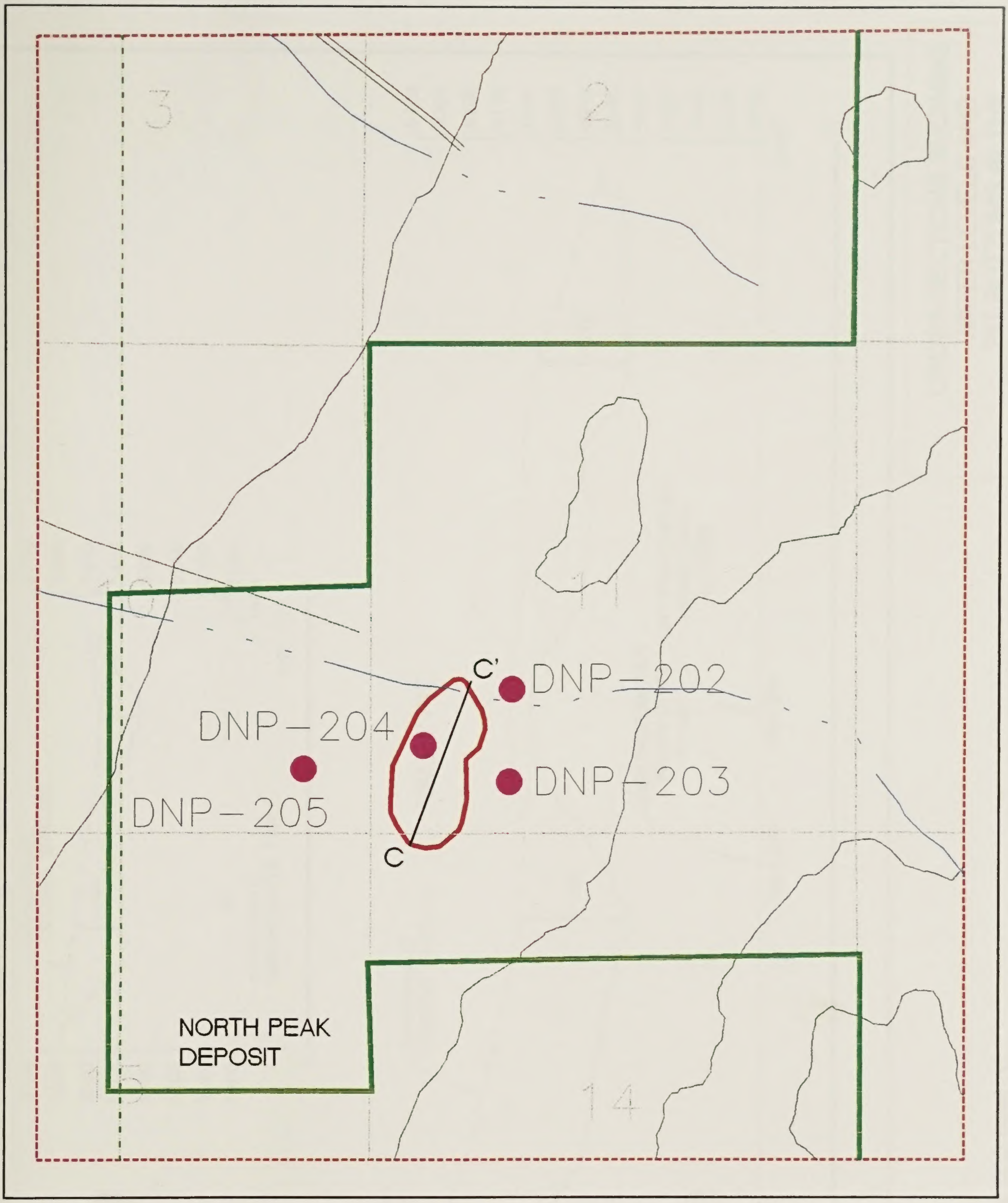
2000 0 SCALE IN FEET 2000

BORBOREHOLE AND CROSS SECTION
LOCATIONS WITHIN
VALMY DEPOSIT

ACAD FILE: 3-2.DWG

JUNE 1998

Figure 3-2B



LEGEND

🟩	PROJECT AREA BOUNDARY
C—C'	CROSS-SECTION LOCATION (SEE FIGURE 3-2)
🟥	PIT OUTLINE
DNT-520/MW-2 ●	BOREHOLE NUMBER (SFPG DRILLHOLE NO./WELL NO.)
— · —	STREAM
- · - · -	GROUNDWATER BOUNDARY

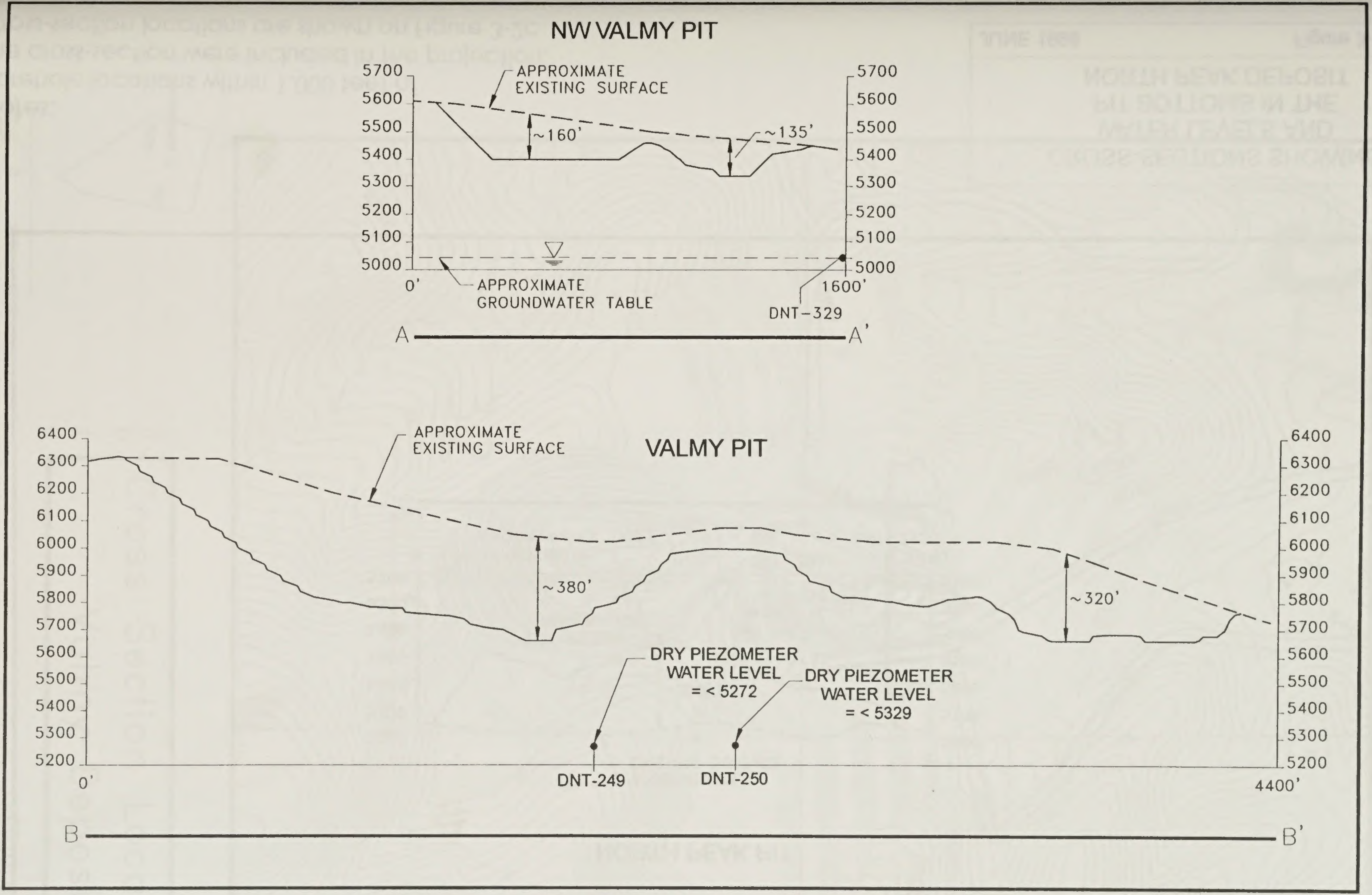
2000 0 SCALE IN FEET 2000

BOREHOLE AND CROSS SECTION
LOCATIONS WITHIN
NORTH PEAK DEPOSIT

ACAD FILE: 3-2.DWG

JUNE 1998

Figure 3-2C



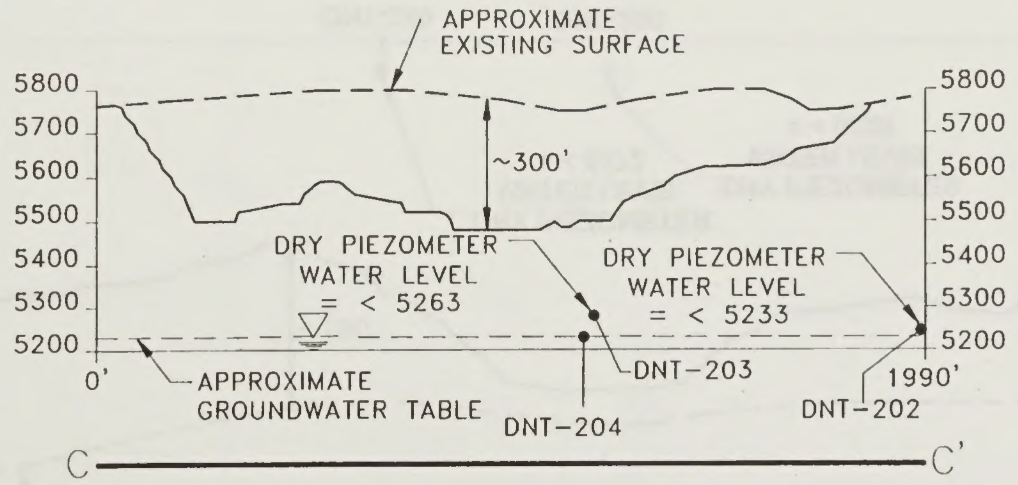
Notes:
Borehole locations within 1,000 feet of the cross-section were included in the projection.
Cross-section locations are shown on Figure 3-2b.

CROSS-SECTIONS SHOWING
WATER LEVELS AND
PIT BOTTOMS IN THE
VALMY DEPOSIT

JUNE 1998

Figure 3-3A

NORTH PEAK PIT

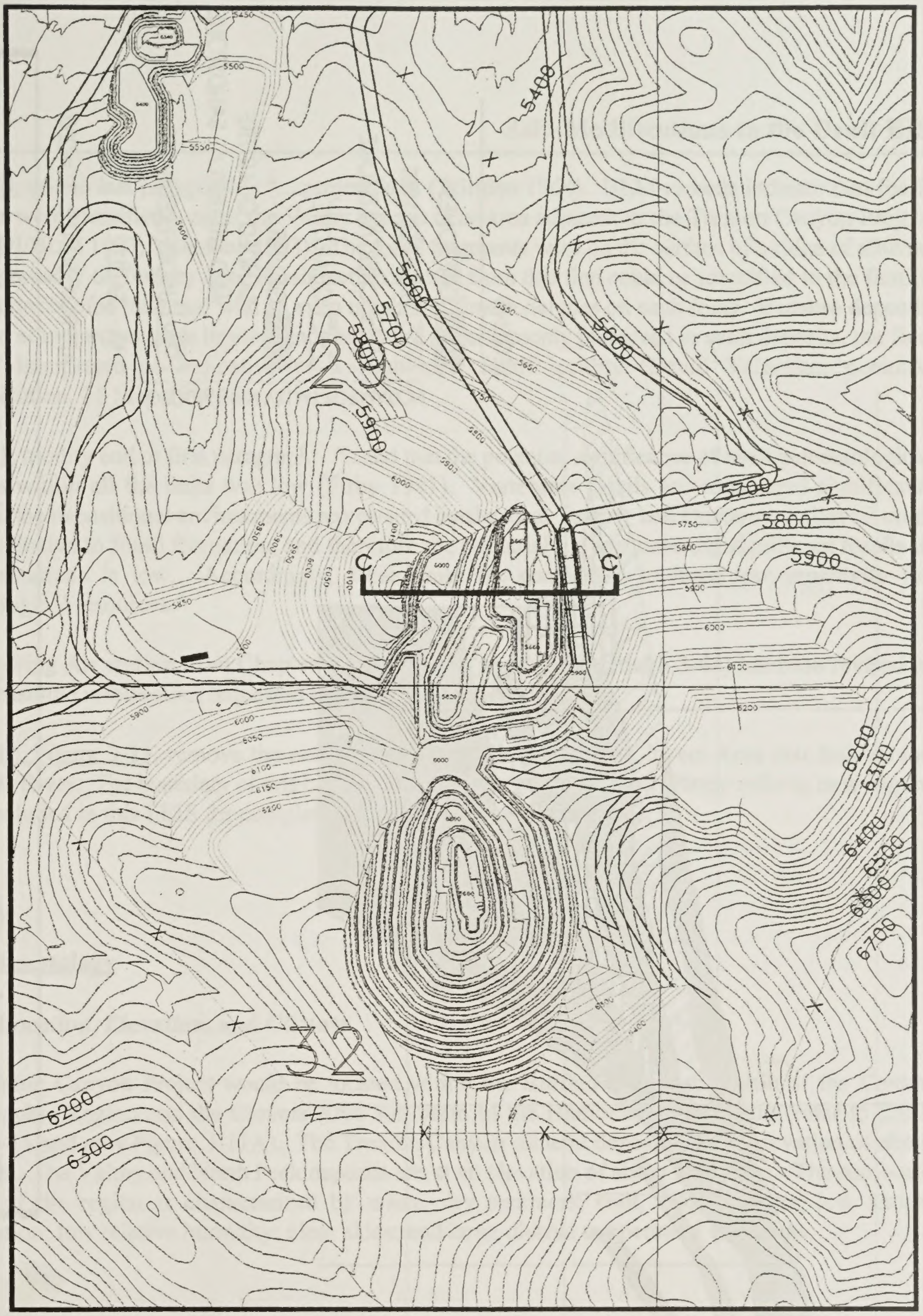


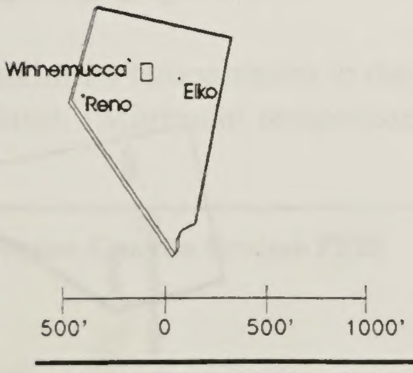
Notes:
Borehole locations within 1,000 feet of the cross-section were included in the projection.
Cross-section locations are shown on Figure 3-2c.

CROSS-SECTIONS SHOWING WATER LEVELS AND PIT BOTTOMS IN THE NORTH PEAK DEPOSIT

JUNE 1998

Figure 3-3B



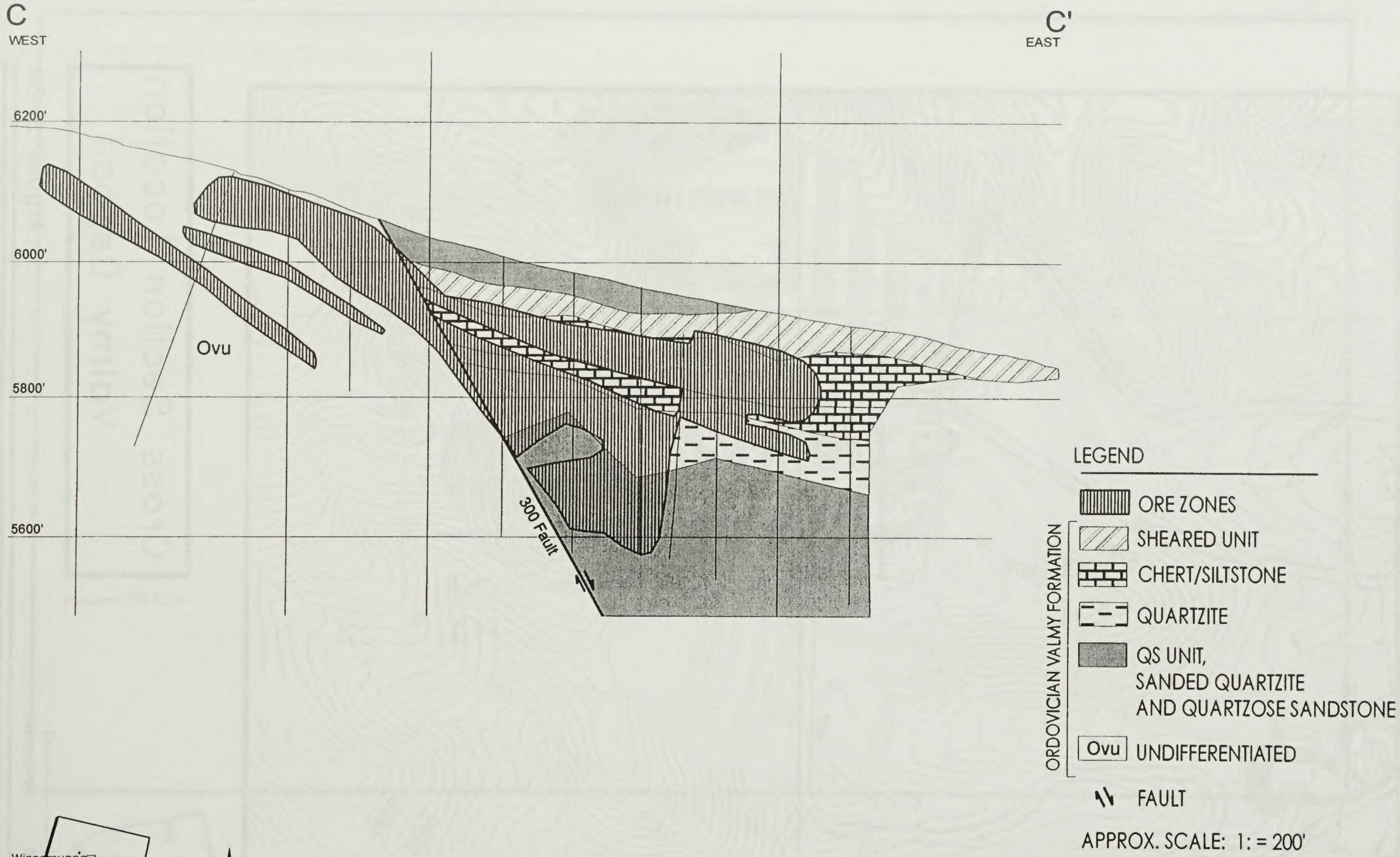


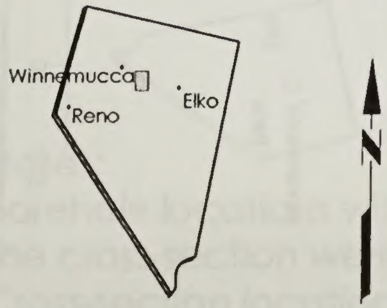
N

Cross Section Location
Valmy Deposit

Figure 3-8A

June 1998





Geologic Cross-Section of the Valmy Deposit

Figure 3-8B

Page 3-40, add to last paragraph: "....project area (Willden 1964). BLM records indicate that fossil fragments were identified west of the Valmy deposit in an area adjacent to the Trenton Canyon Project area (USDI/BLM 1997; Valentine 1993). The fossil fragments were on the surface of a ridge of alluvial deposits probably of Tertiary age. Fossil teeth collected from this find could be identified to the family Artiodactyla (hoofed mammal with an even number of functional toes on each foot). Because deposits of this old alluvium are quite limited, and fossils are not commonly preserved in such deposits, the find was not interpreted as indicative of a significant fossil locality (David Valentine, personal communication, 21 May 1998)."

Page 3-41, modify end of first paragraph: "...and that the potential significance of most paleontological resources within all the units was low (Firby 1981). Vertebrate fossils are considered significant. However, the depositional environments represented by the local Tertiary and Quaternary alluvial units is not conducive to fossil formation, and therefore the potential for encountering significant fossils in these formations is low. Accordingly, these units are considered to have low sensitivity for paleontological resources."

The following Air section from Chapter 3 of the DEIS (pages 3-41 through 3-44) has been revised to include baseline information requested by the USGS reviewers.

Page 3-42, Figure 3-11, remove the north-eastern basin boundary for Clovers Area that follows the Humboldt River. The boundary of this basin extends further north and east. Please refer to new Figure 3-11A included in this FEIS for complete hydrographic basin boundaries.

3.6 AIR

3.6.1 Climatology

3.6.1.1 Location, Elevation, and Climate

The Trenton Canyon Project would be located within the Buffalo Valley sub-basin of the Central Hydrographic Region and the Clovers Area sub-basin of the Humboldt River Basin (refer to DEIS Figure 3-11 and new Figure 3-11A). The Trenton Canyon mineral deposit is at an elevation of about 7,000 feet. The Valmy and North Peak deposits are at an elevation of about 5,500 feet. The semi-arid climate of the region is characterized by warm, dry summers; cool, moist winters; low annual precipitation; low relative humidity; clear skies; and large diurnal temperature variations.

3.6.1.2 Temperature

Maximum temperatures in the area range from 80° F to 100° F in the summer to 30° F to 40° F in the winter. Minimum temperatures range from 30° F to 50° F in the summer to 10° F to 25° F in the winter. Temperature data are available from the Trenton Canyon project area for 1996. The quarterly average, maximum, and minimum temperatures are summarized in Table 3-8.

Table 3-8
Temperature Variation and Precipitation in the Project Area 1996

Quarter	Average Temp. ° F	Max. Temp. ° F	Min. Temp. ° F	Rainfall (in)
January-March	36.0	63.0	10.6	3.35
April-June	54.1	88.8	22.4	1.87
July-September	69.0	91.1	31.6	0.80
October-December	40.9	82.7	15.9	3.43

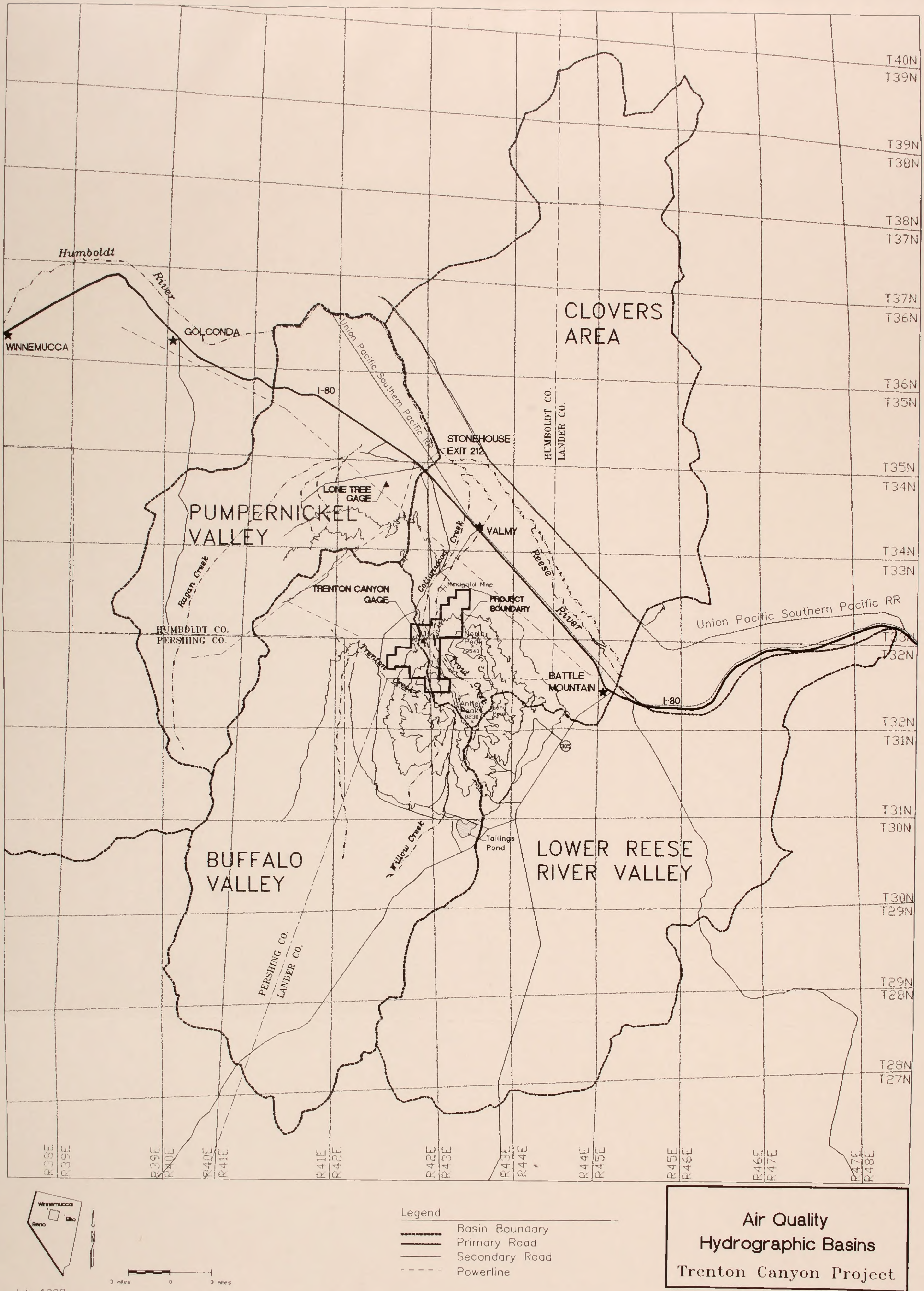
3.6.1.3 Precipitation

On-site meteorological data obtained from monitoring at the Trenton Canyon project area, elevation approximately 5,800 feet, shows that the total annual precipitation was 9.62 inches in 1995 and 9.45 inches in 1996. NOAA data from the Battle Mountain station (#26-0691) indicates that 1995 and 1996 were relatively wet years in the general project vicinity, with precipitation of 122 and 148%, respectively, of the mean 30-year annual precipitation for this station. The 1996 quarterly precipitation data from the Trenton Canyon meteorological station is shown in Table 3-8. Average annual precipitation at elevations similar to the project area (6,000 to 7,000 feet) is estimated to be 12.35 inches (SMI 1996). Most precipitation occurs in late fall to early spring as snow and rain. Precipitation occurs during the summer months mainly as scattered showers and thunderstorms.

3.6.1.4 Wind

Wind speed and direction data were collected in 1995 and 1996 from a meteorological station in the project area. The location of the station is shown as "Trenton Canyon Gage" on DEIS Figure 3-11. The predominant wind direction is from the southwest. The wind blows most of the time at speeds greater than 0.5 miles per hours. The average, maximum, and minimum wind speed data for 1996 are summarized in Table 3-9.

Atmospheric stability is a measure of the atmosphere's ability to disperse pollutants. Unstable atmospheric conditions result in maximum dispersion, stable atmospheric conditions result in minimum dispersion. In 1996, unstable conditions occurred about 30% of the time, stable conditions occurred about 40% of the time, and neutral conditions occurred about 30% of the time.



Air Quality
Hydrographic Basins
Trenton Canyon Project

July 1998

Figure 3-11A

Table 3-9
Windspeed Data for 1996 (in mph)

Quarter	Average wind speed	Maximum wind speed	Minimum wind speed
January-March	9.1	35.8	0.4
April-June	9.5	31.0	1.3
July-September	8.2	26.7	1.1
October-December	9.3	34.5	0.7

3.6.2. Ambient Air Quality

3.6.2.1 Air Pollution Potential

Temperature inversions near the project area occur on some nights and during the winter months. These inversions are usually removed during the day by increasing wind speeds and gradual warming of the atmosphere which results in the vertical mixing of air contaminants.

3.6.2.2 Air Quality

Ambient air quality is evaluated relative to the National Ambient Air Quality Standards (NAAQS), which represent the maximum air concentrations of criteria pollutants determined to have no detrimental effects on public health and/or the environment. Criteria pollutants include particulates 10 microns or smaller in diameter (PM_{10}), sulfur dioxide (SO_2), oxides of nitrogen (NO_x), carbon monoxide (CO), ozone (O_3), and lead (Pb). Standards for PM_{10}, which is the criteria pollutant of greatest concern related to mining activities, are annual PM_{10} levels above 50 micrograms per cubic meter ($\mu g/m^3$) or 150 $\mu g/m^3$ in a 24-hour period.

The sub-basins where air quality may be affected by the project are Clovers, Buffalo Valley, Pumpernickel, and Lower Reese River Valley (DEIS Figure 3-11 and new Figure 3-11A of this FEIS). Background levels for criteria pollutants in the air basins are low with no significant emission sources. Ambient particulates from wind erosion, traffic on unpaved roads, mining and ore processing, agricultural operations, and other sources exist within the region. Measures currently being implemented to reduce emissions include watering and/or chemical stabilization of haul roads and stockpiles.

All four sub-basins are considered to be attainment areas for all criteria pollutants by the Nevada Bureau of Air Quality. The sub-basins are considered Class II areas under Prevention of Significant

Deterioration (PSD) guidelines. The only designated Class I area in Nevada is the Jarbidge Wilderness Area (approximately 110 miles to the northeast of the Trenton Canyon mine).

Page 3-65, new figures showing wetlands and other Waters of the United States have been added to this FEIS as Figures 3-15A and 3-15A1.

Page 3-67, Section 3.9.2, first sentence, replace 14 acres with 14.11 acres.

Page 3-67, Section 3.9.3, add as a third paragraph: "A small amount of riparian habitat is associated with the ephemeral drainages tributary to Cottonwood Creek in the vicinity of the Trenton Canyon deposit. These short, steep drainages contain willow, chokecherry, and elderberry and provide habitat for birds, bats, and mule deer. Water flows in these drainages only in response to precipitation events or from runoff in heavy snow years."

Page 3-70, first paragraph, insert the following after the first sentence: "Area 15 includes most of Lander County between I-80 on the north and Highway 50 on the south, plus a portion of Eureka County and a sliver of Pershing and Humboldt counties. The area is divided into four separate mule deer herd areas, but statistics are maintained on an area basis. The proposed project area is in herd Area 151 which includes the Battle Mountain Range, the Fish Creek Mountains, and a portion of the Shoshone Mountains." Begin a new paragraph with "The annual population..."

Page 3-70, second paragraph, add to end of first sentence, "...has been declining due to drought and grazing pressure."

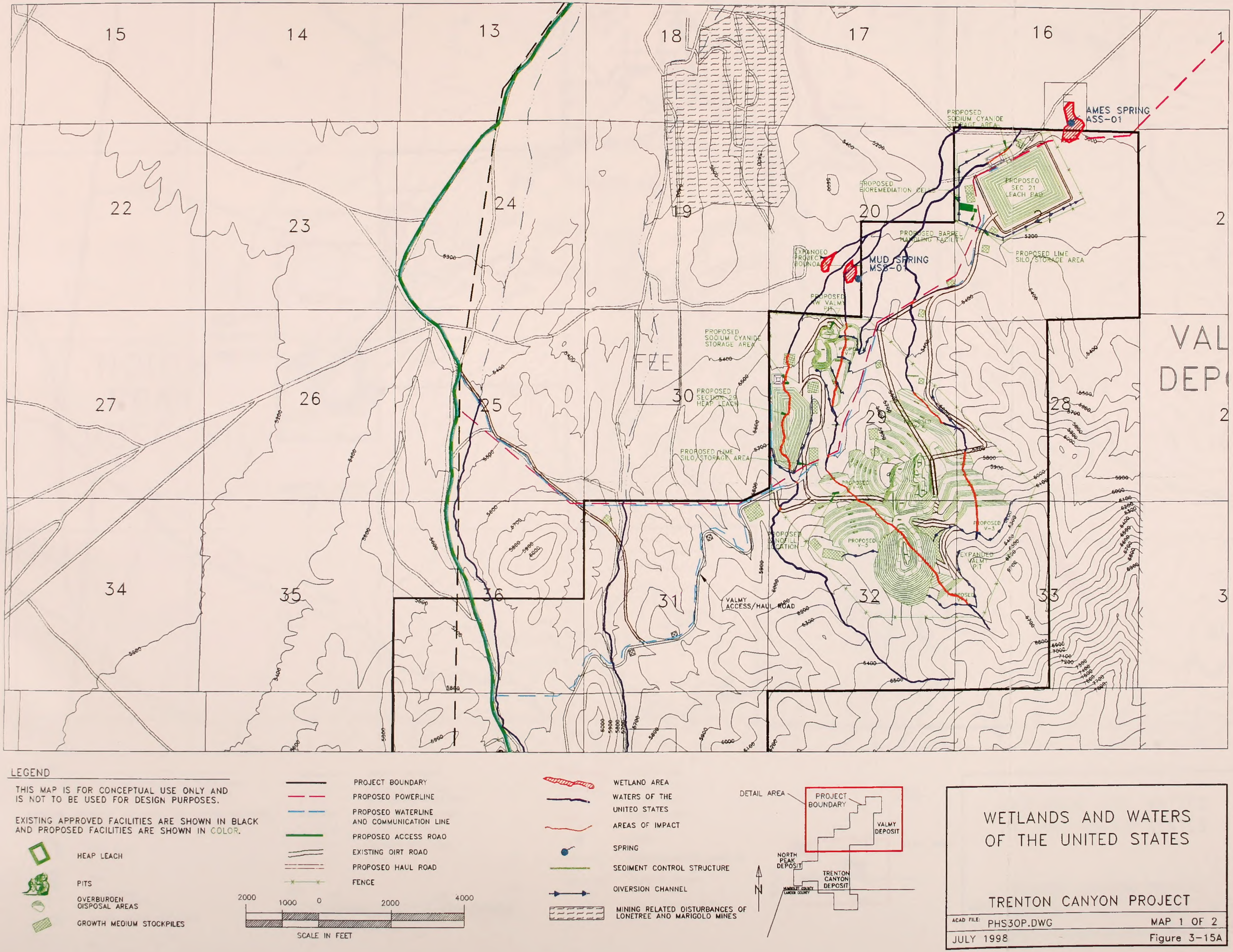
Page 3-76, second paragraph (Section 3.10.3), the term "sensitive" should be replaced by "species of concern" in the sentence beginning with "Eight mammal..."

Page 3-80, Table 3-21, AUMs According to Allotment Categories for the Three Permitees, in the Copper Canyon Allotment, active permittee acreage for the Agri-Beef Company should be 1,002. This changes the total active permittee to 5,023.

Page 3-89, Figure 3-20, revised Figure 3-20 depicts land status changes from comments to the Draft EIS.

Page 3-96, Section 3.16.2, second paragraph, last sentence should read: "These forecasts imply average annual growth rates between 1995 and 2015 of 2.88% for Humboldt County and 0.99% for Lander County, for an overall rate for the study area of 2.39% per year."

Page 3-97, Table 3-26, Total employment for Humboldt County should be 7,690. Total employment for Lander County should be 2,580.



THIS MAP IS FOR CONCEPTUAL USE ONLY AND IS NOT TO BE USED FOR DESIGN PURPOSES.

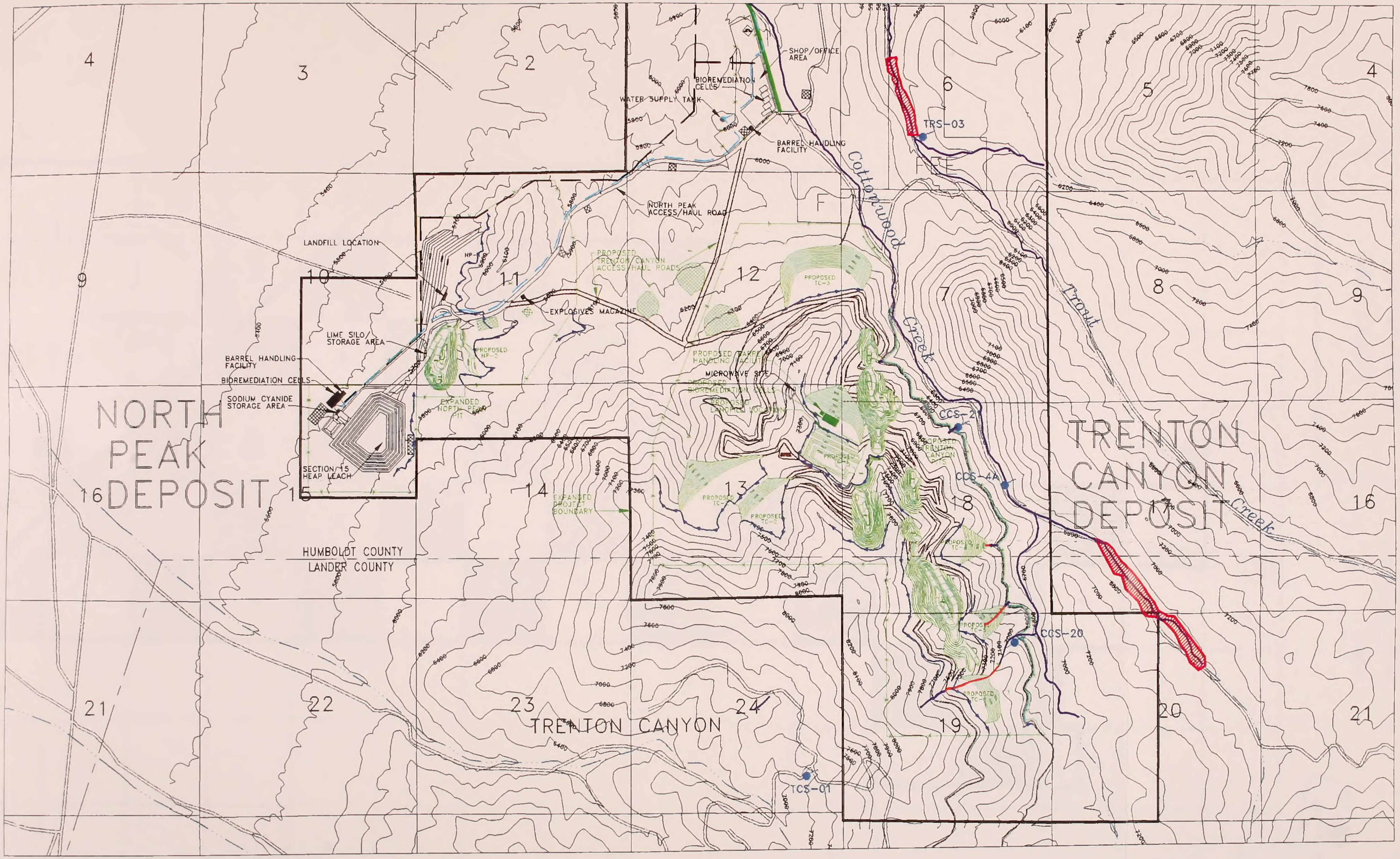
EXISTING APPROVED FACILITIES ARE SHOWN IN BLACK AND PROPOSED FACILITIES ARE SHOWN IN COLOR.

WETLANDS AND WATERS OF THE UNITED STATES

TRENTON CANYON PROJECT

ACAD FILE: PHS30P.DWG
MAP 1 OF 2

JULY 1998
Figure 3-15A



LEGEND

THIS MAP IS FOR CONCEPTUAL USE ONLY AND IS NOT TO BE USED FOR DESIGN PURPOSES.

EXISTING APPROVED FACILITIES ARE SHOWN IN BLACK AND PROPOSED FACILITIES ARE SHOWN IN COLOR.

HEAP LEACH

PITS

OVERBURDEN DISPOSAL AREAS

GROWTH MEDIUM STOCKPILES

PROJECT BOUNDARY

PROPOSED WATERLINE AND COMMUNICATION LINE

PROPOSED ACCESS ROAD

EXISTING DIRT ROAD

PROPOSED HAUL ROAD

FENCE

2000 1000 0 2000 4000

SCALE IN FEET

WETLAND AREA

WATERS OF THE UNITED STATES

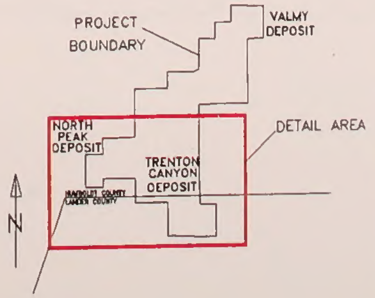
AREAS OF IMPACT

SPRING

SEDIMENT CONTROL STRUCTURE

DIVERSION CHANNEL

ROCK CATCHMENT BERM



WETLANDS AND WATERS OF THE UNITED STATES

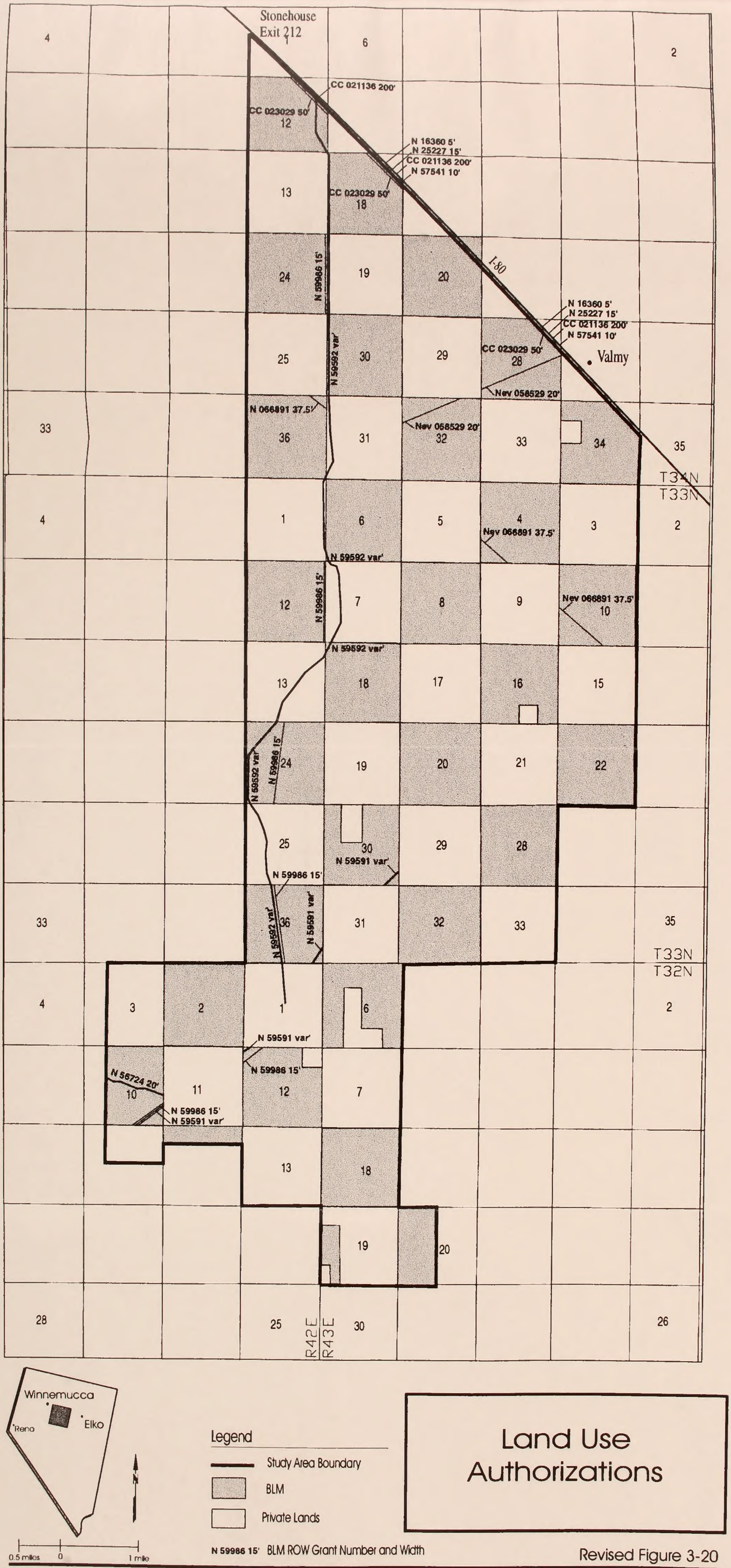
TRENTON CANYON PROJECT

ACAD FILE: PHS30P.DWG

MAP 2 OF 2

JULY 1998

Figure 3-15A1



Land Use Authorizations

Revised Figure 3-20

May 1998

Page 3-99, Section 3.16.4, first paragraph, should be replaced with the following:
"At the 1980 census, single family dwellings accounted for 54% of Humboldt County's 3,754 housing units, with mobile homes accounting for another 28%. Multi-family units made up the balance of 665 units. A decade later, the number of single family homes in Humboldt County had increased by 26%, reaching 2,548 units (still the largest component of the housing stock), but mobile homes had increased to 2,001 units, accounting for 40% of Humboldt County's housing stock in 1990. The number of multi-family units had actually decreased to 495 units (U.S. Census 1980; 1990). Table 3-28 contains the details for Humboldt County and the City of Winnemucca."

Page 3-100, first full paragraph, should read as follows: "According to data supplied by the county assessors to the state demographer's office, the housing stock of the two counties as of July 1, 1996, totaled 7,997 units, which represents an increase of 367 units over the 1990 figure (up 421 in Humboldt County versus a net loss of 54 in Lander County). Both counties showed losses of multi-family units over the period 1990-96 (down 191 units), and Lander County also lost 95 single family units. Increases in mobile homes more than offset the other losses, with much of the expansion having taken place in new subdivisions outside the urban area boundaries. The composition of the mid-1996 housing stock in both counties is tabulated in Table 3-30."

Page 3-102, Table 3-31, Table heading should be "Humboldt County School Enrollment, 1996-1997", 1991-92 should be deleted.

Page 3-115, second paragraph should be replaced with the following: "In addition, the Trenton Canyon locality is the traditional site of a Shoshone raid on a road-building party in 1857 (Carlson 1974) and a military action against the Shoshones in the late 1860's, and from which the place name "Battle Mountain" was apparently derived (Snodgrass 1997; Barrett 1998). Shoshone informants have also corroborated this setting to be that of military action where the U.S. Army attacked a group of young Shoshone and Paiute men (R. Smith 1997-98)."

Supplemental Cultural Resources Information

Western Shoshone Sovereignty Issues and the Treaty of Ruby Valley

Indian treaties stand on essentially the same footing as treaties with foreign nations. They are made pursuant to the U.S. Constitution (Article. VI, §2), and take precedence over any conflicting state laws (Worcester v. Georgia, 31 U.S. [6 Pet]) 515 [1832]). Treaties are the exclusive prerogative of the federal government. The First Trade and Intercourse Act of 1790 forbade the transfer of Indian lands to individuals or states except by treaty "under the authority of the United States." Not only is treaty-making power exclusively federal, it is almost entirely presidential. While it is true that two-thirds of the Senate must concur in any treaty, the executive branch inevitably controls the initiation of the process and the terms of negotiation. Treaty-making with American Indian tribes effectively came to an end in 1871, and formal agreements made with the tribes thereafter were either approved by both houses of Congress or were simply embodied in statutes (Canby 1988:86-87).

Because treaties often contain recitals that they will remain in effect "as long as the grass shall grow" or for some other equally eternal length of time, it is commonly assumed that any alterations in terms would have to be mutually negotiated by the federal government and the tribes. The law, however, is to the contrary. Indian treaties, as well as international treaties, stand on the same footing as federal statutes. Thus, Congress has plenary power to unilaterally abrogate treaties by passing new laws, which become the governing law of the United States (Canby 988:91). Federal mining and land use laws made later in time than the treaties legally amend the rights under those treaties.

Prior to Euro-American influx, the Western Shoshone lived in small groups of extended families spread throughout their territory, which later became southern Idaho, northwestern Utah, and much of northern and central Nevada extending to the Death Valley region of southern California. The 1863 Treaty of Peace and Friendship of Ruby Valley, which was ratified by Congress in 1866, was negotiated to alleviate armed conflicts among the Western Shoshone and the Euro-American moving into northern Nevada. Under the terms of this treaty, the Western Shoshone did not relinquish their aboriginal title to the land although local residents and agencies commonly assumed they had.

In 1946, Congress passed the Indian Claims Commission Act to adjudicate outstanding tribal claims. When the Indian Claims Commission was dissolved in 1978, disputes regarding the Treaty of Ruby Valley were unresolved. The case was transferred to the U.S. Court of Claims, which awarded the Western Shoshone $26 million as compensation for extinguishing tribal claims (Clemmer and Stewart 1986:554-556; Thomas and others 1986:261). Although the Western Shoshone rejected the award, the federal courts ruled that the deposition of $26 million in an account for the Western Shoshone extinguished all tribal aboriginal title to the traditional territory of the Western Shoshone.

Directly related federal court decisions stem from the 1974 BLM charge that two Western Shoshone sisters, Mary and Carrie Dann of Beowawe, were illegally grazing livestock on BLM land. The sisters, in turn, sued the government claiming the Western Shoshone had never relinquished title to the land. The initial district ruling in 1980 concluded that the Western Shoshone title was extinguished with the $26 million award by the Court of Claims. The Danns appealed and the circuit court upheld their claim in 1983, but in 1985 the U.S. Supreme Court overturned the appeal ruling, concurring with the original finding that Western Shoshone title had been extinguished in 1979 with the $26 million award. The Supreme Court also ruled that "individual aboriginal rights" (which are use rights not title to land) could be pursued in lower courts. The Danns continued to pursue their case, and in 1989 the circuit court reversed earlier rulings, declaring that the Western Shoshone lost title to their lands in 1872, the "date of valuation" defined for the Court of Claims compensation award (Crum 1994:176-183).

Executive Memorandum of 29 April 1994 directs federal agencies to develop government-to-government relationships with tribal governments to formalize interaction between agencies and tribes. BLM encourages the Te-Moak Tribes of Western Shoshone and other tribes to formalize a government-to-government relationship to address outstanding land and resource management issues, recognizing that BLM must abide by the law of the land as defined by the legislative and judicial branches of the federal government.

Sovereignty is a word of many meanings. At its most basic, the term refers to the inherent right or power to govern. At the time of European discovery of America, the tribes were sovereign by nature and necessity as they conducted their own affairs and depended upon no outside source of power to legitimize their acts of government. By treating the tribes as foreign nations and by leaving them to regulate their own internal affairs, the colonial powers and later the federal government recognized the sovereign status of the tribes. On the other hand, the Europeans clearly claimed dominion over all the territories of the New World, and those claims contested the sovereignty of the tribes living there. The legal status of tribes as nations was therefore clouded by uncertainties, and it was left to the Supreme Court to attempt to resolve them (Canby 1988:66).

Today, as dependent sovereign nations, the sovereignty of tribes is generally understood to mean that: (1) Indian tribes possess inherent governmental power over all internal affairs; (2) the states are precluded from interfering with the tribes in their self-government; and, (3) Congress had plenary power to limit tribal sovereignty (Canby 1988:71). As a sovereign, tribes are free to act unless some federal intrusion has affirmatively modified that sovereignty. To determine whether sovereignty has been modified, relevant statutes, treaties, executive policies, and administrative or judicial decisions must be considered (Canby 1988:72). Congress' power over Indian affairs is plenary, and there are numerous examples of federal statutes limiting the sovereignty of the tribes (Canby 1988:78). Federal mining and land use laws made later in time than the treaties legally amend the rights under those treaties.

The United States courts have ruled that Western Shoshone aboriginal rights were extinguished in accordance with federal law (United States v Dann 1985 and 1989). Therefore the Western Shoshone no longer retain sovereign rights over lands outside their reservations. There are well-established federal laws and regulations to protect the environment and the natural and cultural resources on federal lands. BLM is complying with those laws in preparing the Trenton Canyon Project EIS, and through the public involvement and tribal consultations mandated by implementing regulations, the Western Shoshone have an opportunity to participate in that process.

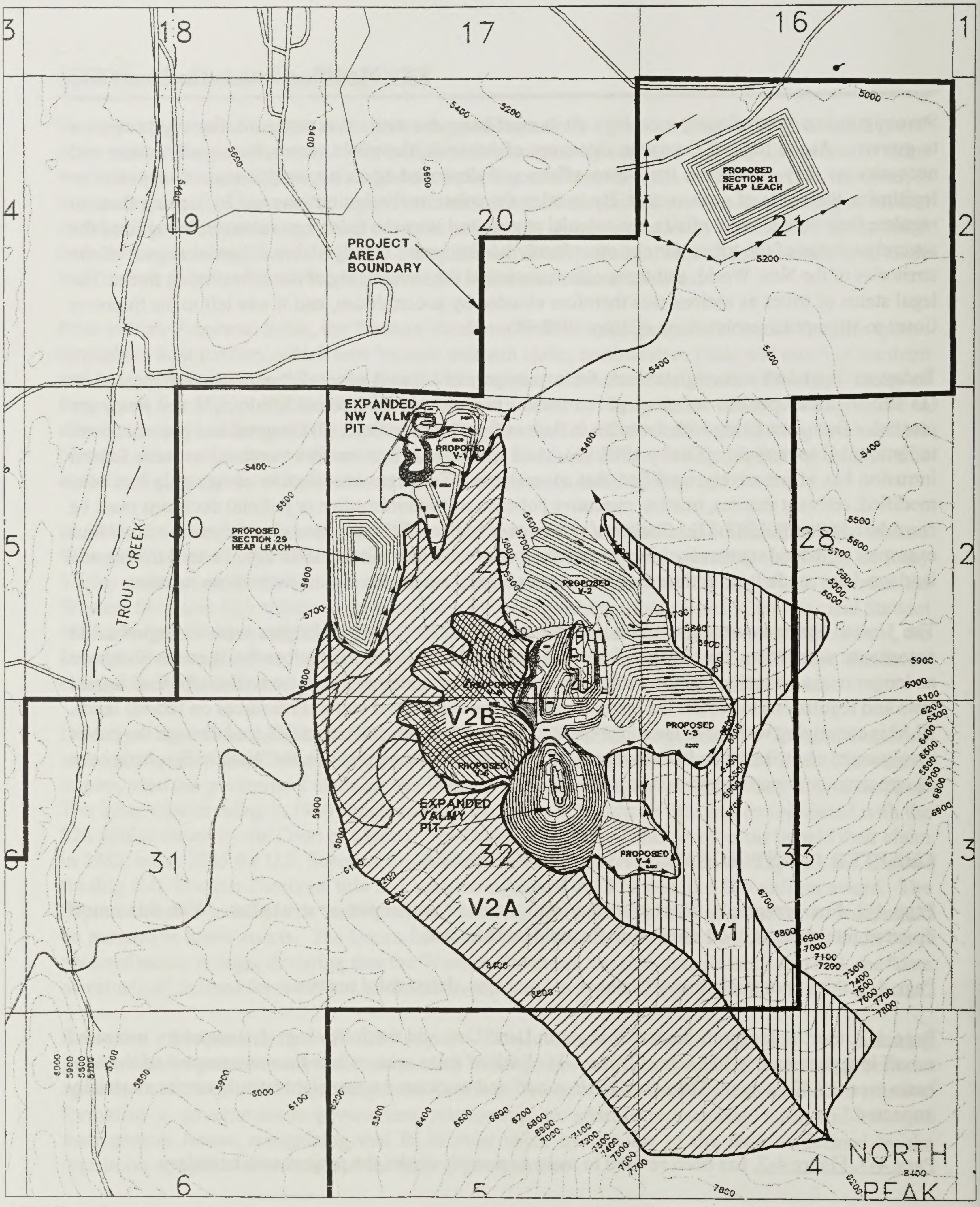
CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

Page 4-3, first paragraph, insert after the last sentence "...open pits or stockpiles. With this runoff diverted into streams, total direct runoff would be increased."

Page 4-3, third paragraph, under Changes in Land Use, delete third sentence.

Page 4-3, fourth paragraph, under Changes in Land Use, add the following: "...temporary increased runoff is approximately 155 acres (Table 4-1). Each of these areas is less than one percent of the total basin area (19,424 acres). Thus, total basin runoff and associated water rights would not be materially impacted."

Page 4-7, Figure 4-2, has been revised to more accurately depict the project area boundary.



BASIN AREAS FOR DIVERSIONS
VALMY AREA
TRENTON CANYON PROJECT

DATE: JUNE 1998 Revised Figure 4-2

Page 4-8, first paragraph, second sentence, revise as follows: "...into the same drainages. Thus, flows would not change from the natural condition, and surface water rights would not be affected. The effect of higher..."

Page 4-10, revise first paragraph as follows: "Therefore, under the Proposed Action, the total area removed from the watershed during operation is approximately 592 acres, or three percent of the total basin area. The total area removed from the watershed following reclamation is approximately 387 acres, or two percent of the total basin area. The area of otherwise disturbed surfaces leading to temporary increased runoff is approximately 296 acres, or 1.5 percent of the total basin area (Table 4-1)."

Page 4-10, delete second paragraph. Replace with the following: "Local peak flows may increase within Cottonwood and Trout Creeks, especially during high precipitation periods for the seven year life of the mine, due to disturbed surfaces leading to increased runoff. Total direct runoff to the creeks is not expected to change materially, since areas of increased runoff compensate for areas removed from the watershed, and both constitute a small percentage of the total basin area. Long-term impacts to surface water quantity after reclamation would also be minor, for the reasons stated above. No change would occur to channel geometry, and the risk of sedimentation would be minimized by design features and management practices as proposed in the Plan of Operations and Reclamation Plan (Section 2.4.7)."

Surface water rights would not be materially impacted by the Proposed Action, since only minor changes of land use would occur, no additional water supply would be developed for mining operations."

Page 4-14, first paragraph, first sentence, the reference to Table 4-4 should be Table 4-3.

Page 4-14 and 4-15, Comparison to State and Federal Standards, delete the following text: "There are predicted to be periodic exceedances of the secondary drinking water standards of 250 mg/L for sulfate. This effect is due to the relatively high values of sulfate in the water infiltrating through the overburden disposal areas when mixed with low flow values of the creek waters. When baseflow in the creek is greater than 1 gpm, the sulfate concentration would be within the federal and state standards. Typical flow measurements within the creek range between 1 and 10 gpm; low flow periods measured typically 4 gpm or higher."

Page 4-15, Erosion Potential, second sentence, add the word "potential" before "direct delivery."

Page 4-16, Diversions, fourth sentence should be revised as follows: "The area draining into the TC-6 diversion channel would expand approximately 60% (from 158 acres under the Proposed Action to 253 acres), leading to greater concentration of flows at the discharge for drainage area T-1." Delete fifth sentence. Replace sentence six with the following: "The disturbed acreage would increase with this alternative by 25 acres (from 81 to 106 acres) all within Basin 1 from Figure 3-1."

Page 4-18, insert the following sentence at the end of first full paragraph: "Impacts to direct runoff and water rights would be similar to those associated with the Proposed Action."

Page 4-18, Erosion Potential, second sentence, revise as follows: "As the disturbed areas are upslope of Cottonwood Creek, there would be a potential risk of sediment loading to riparian areas and aquatic habitat during mining."

Page 4-19, Section 4.2.2, second paragraph should be revised as follows: "Monitoring of Cottonwood Creek for suspended solids and turbidity and the spring at location CCS-4A for sulfate concentrations would be advisable on a semi-annual basis. Surface waters, identified in this document, would be monitored annually for quantity and quality."

Page 4-20, insert the following sentence at the end of first full paragraph: "As a result, no impacts to underground water rights in the mine vicinity are expected for any of the project alternatives."

Page 4-24, Section 4.3.2, first paragraph, second sentence, add "and quantity" to end of sentence.

Page 4-27, Section 4.4.1.3, replace this section with the following: "This Alternative could result in a greater risk of spills than the Proposed Action. By eliminating TC-4 and TC-5, there would be the same number of haul trips on the slopes immediately above Cottonwood Creek, however, due to longer haul distances and increased travel time, the probability of spills from equipment hauling diesel and hydraulic fluids to sensitive areas would be increased. Long-term exposures to diesel or hydraulic fuel in soils or groundwater would not be expected due to the anticipated rapid response and cleanup procedures outlined in the Spill Prevention, Control, and Countermeasure and Emergency Response Plans."

Page 4-29, Section 4.5.1.2, second paragraph, delete third (last) sentence.

The Air section from Chapter 4 of the DEIS (pages 4-30 through 4-35) has been revised to include the baseline information requested by the USGS reviewers.

4.6 AIR

The primary issue related to air quality is the increase in fugitive particulate and fugitive gaseous emissions related to operating mining equipment and increased surface disturbance.

4.6.1 Direct and Indirect Impacts

Air emissions would result from exploration activities and the construction, operation, closure and reclamation phases of the Proposed Action and any of the alternatives. Mining, ore-processing, and construction activities associated with the Proposed Action and other alternatives would be a source of PM_{10} and hazardous air pollutants (fine airborne metal dust as components of particulate matter and as components of volatile organic compounds (VOCs)). Gasoline- and diesel-powered vehicles and equipment would be primary sources of gaseous pollutants such as SO_2, NO_x, CO, and VOCs.

Nature of Air Emissions - Particulate emissions associated with the Proposed Action and other alternatives may potentially result in temporary decreases in visibility near the operations, especially during dust storms. The only point source of particulate emissions would result from handling of lime during ore processing.

The emission sources for gaseous criteria pollutants resulting from any of the project alternatives would be from storage of hydrocarbon fuels and mobile sources such as vehicles. Emissions would include SO_2, NO_x, CO, and VOCs.

Sodium cyanide solution is maintained at a basic pH through the use of lime and caustic soda in the heap leaching process. The potential for hydrogen cyanide gas (HCN) generation is therefore minimized. HCN decays rapidly in the presence of oxygen and sunlight and is not expected to have a measurable impact on air quality in the project area.

Overburden material at the Trenton Canyon, Valmy, and North Peak mine areas contains small amounts of numerous metals. Air-borne metals are released through mining and construction activities, and are associated with PM_{10} particulate emissions. Measures used to reduce particulate emissions are also effective in reducing concentrations of air-borne metals.

Air Quality Effect - The effect of particulate emissions depends on the quantity and drift potential of the dust particles released into the atmosphere. The larger dust particles settle out near the source, while fine particles are dispersed over much greater distances. Theoretical drift distances, as a function of particulate diameter and mean wind speed, have been computed for fugitive dust emissions. For a typical wind speed of 10 miles per hour, particles larger than 100 micrometers are likely to settle out within 20 to 30 feet from the source. (For comparison, a human hair has a thickness of about 100 micrometers). Particles 30 to 100 micrometers are likely to settle within a few hundred feet, depending on the extent of atmospheric turbulence. Dust particles smaller than 30 micrometers are generally recognized as emissions that may remain suspended for an indefinite period of time.

The quantity of gaseous emissions would be small compared to the fugitive particulate and would dissipate faster. It is unlikely that any of the gaseous emissions would influence the air quality beyond the project area boundary under any of the alternatives. Most of the emissions that would be transported beyond the project area boundary would move in the prevailing wind direction, which is north and east of the project area. The closest human receptors for these emissions would be town of Valmy which is 13 miles north of the Trenton Canyon mine area and 6 miles north of the Valmy mine area.

Standards for the Impact Analysis - Potential impacts to air quality were compared against the NAAQS and federal Prevention of Significant Deterioration (PSD) increments, which have been adopted by the State of Nevada. The NAAQS for PM_{10}, which is the criteria pollutant of greatest concern related to mining activities, are annual PM_{10} levels of 50 micrograms per cubic meter ($\mu g/m^3$) or 150 $\mu g/m^3$ in a 24-hour period. PSD increments have been established to prevent the deterioration of ambient air quality in attainment areas. The 24-hour and annual Class II PM_{10} PSD increments are 30 $\mu g/m^3$ and 17 $\mu g/m^3$, respectively.

4.6.1.1. No Action Alternative

Under the No Action Alternative, Newmont is currently authorized to disturb 1,202 acres (including 336 acres of public land) associated with mining at North Peak and Valmy and exploration activities for the Trenton Canyon Project (Table 2-2). Impacts from the activities under this alternative have been previously evaluated and, where appropriate, are permitted under the NDEP Air Quality Operating Permit.

During mining operations and the reclamation phase, there would be daily generation of particulate and gaseous emissions from the following activities:

- Mining of North Peak pit and a overburden disposal area,
- Mining of the Valmy pits, overburden disposal areas, and growth medium stockpiles,
- Tail-pipe emissions from mobile sources,
- Emissions from reclamation activities, including slope grading,
- Emissions from the lime silo, and
- Emissions from hydrocarbon fuel storage.

Monitoring data from the vicinity of the project (Santa Fe Pacific Gold Corporation 1995) indicate that 25 $\mu g/m^3$ is the concentration of PM_{10} value below which 85% of all 24-hour PM_{10} concentrations were monitored in 1995. The top 15% of the concentrations can be attributed to strong winds that cause dust storms in semi-arid regions and are not representative of current conditions. An average annual PM_{10} concentration of approximately 15 $\mu g/m^3$ would result from existing and permitted operations under the No Action Alternative given an average annual PM_{10} background concentration of 9.75 $\mu g/m^3$. The NAAQS standard is 150 $\mu g/m^3$. Given the distance from the Valmy mine area to the closest human receptors, it can be presumed that only a portion of the fugitive particulate and none of the gaseous emissions would impact the ambient air quality in the town of Valmy.

4.6.1.2 Proposed Action

Expansion of operations in the mine as described in the Proposed Action would result in 1,480 acres of disturbance more than the currently permitted activities, for a total mining-related surface disturbance of 2,682 acres.

Air emissions during road and facility construction would be of a relatively short duration and would include:

- Fugitive dust emissions from widening or realigning the existing access road and from constructing new haul roads,
- Fugitive dust emissions from construction activities at the shop/office area, barrel handling facilities, and bioremediation cells,

- Fugitive dust emissions from construction of a heap leach facility near the Valmy pit in either Section 29 or 21, and
- Tail-pipe emissions from mobile sources.

During mining operations and the reclamation phase, there would be daily generation of particulate and gaseous emissions from the following activities:

- Expansion of North Peak pit and a new overburden disposal area,
- Expansion of the Valmy pits, overburden disposal areas, and growth medium stockpiles,
- Development of Trenton Canyon pits, overburden disposal areas, growth medium stockpiles, and access/haul roads,
- Tail-pipe emissions from mobile sources,
- Emissions from reclamation activities, including slope grading,
- Emissions from the lime silo, and
- Emissions from hydrocarbon fuel storage.

Quantity of Air Emissions

Future air emissions have been quantified by using emission factors from EPA (AP-42, Compilation of Air Pollutant Emission Factors 1995) and from other sources according to standard practices followed by the mining industry.

Table 4-7 shows the estimated increase over current approved emissions that would result from the Proposed Action for the Trenton Canyon Project. The fugitive source emissions would be from drilling, blasting, loading and unloading of ore and overburden material, haul roads, wind erosion of overburden disposal areas, leach heaps, and disturbed areas. The only point source emission would be the loading and unloading of calcium carbonate to the lime silos.

Table 4-7
Estimated Controlled Emissions from the Proposed Action (tons per year)

Emissions	PM_{10}	SO_2	NO_x	CO	VOC
Point/Lime Silo	1.18	n/a	n/a	n/a	n/a
Non-process/fugitive*	29.56	n/a	n/a	n/a	n/a
Mobile	5.4	16.3	151.0	42.2	22.3
Total	36.1	16.3	151.0	42.2	22.3

n/a = Not Applicable
* Fugitive source emissions consist of wind erosion, wet drilling, and truck hauling.

The total PM_{10} emissions from the Proposed Action is estimated to be 36.1 tons per year (Table 4-7). The fugitive PM_{10} emissions may include small quantities of airborne metal which may be classified as Hazardous Air Pollutants (HAPs). The effect of airborne metal emissions is expected to be negligible. Mobile source combustion emissions result from haul trucks, loaders, graders, dozers, and water trucks. Total estimated emissions from those sources are shown in Table 4-7.

Air Quality Effect

The total project emissions for the Proposed Action represent less than 20% of the total projected emissions from the Lone Tree Mine (LTM) which is within the same air basin. Air dispersion modeling at LTM resulted in concentrations of these constituents that are far below the NAAQS for PM_{10}, SO_2, NO_x, and CO. For PM_{10}, the modeled concentration was 48.5 $\mu g/m^3$ for 24-hour and 17.5 $\mu g/m^3$ for annual projection as compared to 150 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively for the NAAQS. This model is conservative by nature, therefore, since the Trenton Canyon Project represents only a portion of the total annual emissions of LTM, the direct effect of the Trenton Canyon Project would not exceed the NAAQS nor PSD increments.

Given the distance from the mining areas to the closest human receptors, it can be presumed that only a portion of the fugitive particulate (30 micrometers or less fraction) and none of the gaseous emissions may influence the ambient air quality in the town of Valmy. Particulate emissions resulting from the operations at the Trenton Canyon Project may influence the air quality at Marigold Mine. Emissions from the Proposed Action would not cause NAAQS exceedances at Valmy or Marigold Mine. No significant impact to the Jarbidge Wilderness Class I area is expected, given the distance to the Class I area and the quantity of emissions from the Proposed Action.

4.6.1.3. Expansion of TC-6 to Eliminate TC-4 and TC-5

This alternative would involve an overburden haul distance 1-2 miles longer and 25 acres more surface disturbance than the Proposed Action. This would result in less than a 5% increase in air emissions when compared to the Proposed Action. The projected impacts from the Proposed Action were well below the NAAQS and allowable PSD increments; therefore, the impacts from this alternative would also be below the NAAQS and allowable PSD increments.

4.6.1.4 Partial Backfill Alternatives

Rehandling of TC-4 and TC-5

The impacts associated with this alternative would be similar to those for the Proposed Action. The duration of the air impacts would be longer than the Proposed Action because after the ore has been extracted, additional fugitive particulate and gaseous emissions from equipment would occur during the placement of overburden material back into the pits.

Partial Sequential Backfill of Trenton Canyon Pits

Pit backfilling can occur within the same pit or in adjacent pits and it can eliminate material rehandle if backfilling is done during the mining sequence. The shorter haul distance for handling the same volume of material would result in less PM_{10} and gaseous emissions than the Proposed Action, Expansion of TC-6, or Rehandling of TC-4 and TC-5 alternatives.

4.6.2 Potential Mitigation and Monitoring Measures

As part of the air quality operating permit, fugitive emissions for the Proposed Action and any of the alternatives would be minimized by clearing only as much land as can be adequately controlled by watering, chemical stabilization or other controls approved by the Nevada Bureau of Air Quality. Specific dust control measures would include watering or chemical stabilization of unpaved haul roads, access roads and ore stockpiles.

Concurrent reclamation and revegetating with bunch grasses and shrubs as part of the proposed reclamation plan mitigates long-term fugitive dust emissions from disturbed areas.

No additional mitigation or monitoring measures would be required beyond those proposed in the Plan of Operations and Reclamation Plan or required by the Bureau of Air Quality.

4.6.3 Residual Adverse Effects and Irreversible and Irretrievable Commitment of Resources

The emission sources from the Proposed Action and any of the alternatives would not be present when the mining activities cease and mine closure and reclamation activities are completed (expected by 2009).

Page 4-38, Section 4.7.1.3, fourth sentence should be revised as follows: "The distance from the expanded TC-6 overburden disposal area to the main stem perennial Cottonwood Creek would be greater than for the Proposed Action."

Page 4-41, Section 4.8.1.2, second paragraph, delete last two sentences and replace with the following: "Wyoming big sagebrush, the dominant vegetation type in the project area, covers 9,052 acres and would comprise over 75 percent of the vegetation losses (refer to Table 4-9 in the DEIS). Low sagebrush would have 79.6 acres, or 38 percent of this vegetation community in the project area, disturbed by the Proposed Action. Approximately 157.9 acres of mountain big sagebrush, or 35 percent of this vegetation community, would be removed by the Proposed Action. Approximately 72 percent of the 23 total acres of the black sagebrush population would be disturbed by the Proposed Action. However, black sagebrush is relatively common throughout the region. The remainder of the vegetation removed (approximately 239.5 acres) would be in the salt desert shrub and greasewood vegetation communities."

Page 4-42, Table 4-9, the title of this table should be revised to state, "Vegetation Disturbed by the Trenton Canyon Project (Combined No Action and Proposed Action)."

Page 4-46, Section 4.9.1.2, third paragraph, third sentence, replace 1.97 acres with 2.02 acres.

Page 4-46, Section 4.9.1.2, fourth paragraph, first sentence should be revised as follows: "There are 8 locations for areas of impact within the drainages associated with the Trenton Canyon mine area and these include five road crossings, and three overburden disposal areas."

Page 4-46, Section 4.9.1.3, revise this section as follows: "All elements of this alternative would be similar to the Proposed Action with the exception of the surface disturbance of approximately 25 acres more than the Proposed Action. This alternative would also eliminate two areas of impact in the Trenton Canyon area (at overburden disposal area TC-4 and TC-5) which would potentially cross the drainages which feed Cottonwood Creek. By moving these overburden disposal areas further from the perennial portion of Cottonwood Creek, this alternative would thereby decrease the potential indirect effects of sedimentation to Cottonwood Creek. This alternative action would still include the erosion control measures at the base of the overburden disposal areas and the berm constructed on the existing exploration road that parallels Cottonwood Creek."

Page 4-47, Section 4.9.2, should be revised as follows: "To reduce the impact of sediment erosion during mining operations under the Proposed Action, sediment control structures could be placed at the toe of each overburden disposal area. Minor design changes would be implemented where needed to maintain downstream flow and to minimize the effect on the drainage into site wetlands. Additional minimization, mitigation and monitoring measures may be required in order for the project to satisfy Section 404(b)(1) guidelines and to qualify for a Section 404 permit."

Page 4-48, Section 4.10.1, first paragraph, second sentence, replace "may" with "would." Second paragraph, first sentence: Delete "Possible..."

Page 4-48, Section 4.10.1, third paragraph, second sentence, revise as follows: "The subsequent increase in traffic on new and upgraded roads and the development of the Proposed Action would increase the potential for direct mortality of less mobile species including small animals, such as mammals, birds, and reptiles on a local basis. A number of non-mobile and small mammal and herptiles would be lost during construction and earthmoving activities. Such losses, although unavoidable are not considered to jeopardize any of the populations of the region, and increased fecundity and natality of these affected populations are expected to again fill habitats that are made available through the revegetation program or are adjacent to disturbed sites."

Page 4-49, Section 4.10.1.1, second sentence, replace "could" with "would."

Page 4-50, Big Game, replace the second paragraph with the following: "As a result of the Proposed Action or other project alternatives, mule deer populations would likely decline due to direct, but temporary, removal of habitat and vegetation cover where the mine facilities would be located. However, mule deer losses are not expected to jeopardize the survival of mule deer in the Battle Mountain Range. Mule deer populations comparable to pre-disturbance conditions would be expected following reclamation."

Page 4-50, Big Game, fourth paragraph should be revised as follows: "Reclamation of these areas would be designed to maintain forage and wildlife habitat value after completion of the mining operation. Monitoring of habitat conditions on the reclaimed areas will be conducted and additional mitigation will be required, if necessary, to assure the restoration of the wildlife habitat."

Page 4-51, Impacts to Birds, second paragraph, insert sentence after third sentence, "Loss of these communities would have a direct but insignificant impact to sage grouse populations due to the low number of sage grouse observed during baseline surveys."

Page 4-51, Impacts to Reptiles and Amphibians, replace last sentence to read: "The loss of these vegetation communities would have a direct but insignificant impact to reptiles and amphibians."

Page 4-52, Section 4.10.1.2, first sentence, "listed as federal candidate" should be omitted from "species of concern listed as federal candidate."

Page 4-52, Section 4.10.1.3, second sentence, change the word "ravines" to "drainage basins." The third sentence should be revised as follows: "These drainage basins provide potential habitat for bats, and forage for other wildlife and livestock." The fourth sentence should read: "The new location of TC-6 is further from the perennial portion of Cottonwood Creek which reduces the risk of sedimentation in the stream and riparian habitat."

Page 4-53, Section 4.10.1.4, should be rephrased to state: "The backfill alternatives as described in Section 2.6.2.3 could, after reclamation, reduce the total amount of wildlife habitat disturbed by 30-50 acres compared to disturbance from the Proposed Action. This assumes that partial backfill of overburden material to the pits would provide for additional wildlife habitat following reclamation."

Page 4-62, Section 4.14.1.2, insert the following sentence at the end of the fourth paragraph: "Occasionally, visual quality in the project area may be affected due to dust emissions."

Page 4-72, Section 4.14.2, insert a third bullet that states: "Specific dust control measures would include watering or chemically stabilizing unpaved haul roads, access roads and ore stockpiles."

Page 4-81, Section 4.17.1.2, insert the following after the second paragraph: "Some six to eight additional significant cultural resources are located within 500 feet of the footprint of the Proposed Action. No potential for direct or indirect impacts to these sites in this buffer zone has been identified. If ongoing consultation, in accordance with Section 106 of the National Historic Preservation Act, should determine that the historic values of these sites will be affected, measures to mitigate those impacts also would be developed and implemented."

Page 4-84, insert new Sections 4.17A, Environmental Justice, and 4.17B, Supplemental Cultural Resources Information (as follows):

4.17A Environmental Justice

Since publication of Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations in the Federal Register on 11 February 1994 (59 FR 7629), BLM has been developing a strategy for implementing the order. Currently, BLM relies on the Environmental Justice Guidance Under the National Environmental Policy Act prepared by the Council on Environmental Quality, in implementing EO 12898 in preparing NEPA documents.

EO 12898 requires identifying and addressing disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. These requirements were addressed in preparing the Trenton Canyon Project EIS by (1) ensuring broad distribution of public information on the Proposed Action through a public scoping process begun in September 1996, and (2) conducting specific consultations with Native American communities.

The social and economic characteristics of the project area are discussed in Section 3.16. The project area population is predominantly Caucasian and Hispanic (84 percent in Humboldt County; 90 percent in Lander County) with the minority Native Americans constituting 5 percent of the population (U.S. Census 1990). The two Native American communities in these two counties are (1) the Winnemucca Colony, located on the edge of the town of Winnemucca in Humboldt County, approximately 35 miles to the northwest of the Trenton Canyon Project area, and (2) the Battle Mountain Colony, located about 10 miles east of the project area near the town of Battle Mountain in Lander County. When Europeans first arrived in the region, the Battle Mountain region was a boundary area between the Northern Paiutes and Newe (the ancestors of the Western Shoshone). The modern colonies are descendant communities of these aboriginal groups.

The intent of the environmental justice guidance is to prevent discriminatory placement of projects in and around minority populations in comparison to non-minority communities. In the case of the Trenton Canyon Project, the project is driven by the location of ore bodies, and BLM does not have the option of choosing another location for the project.

No significant adverse impacts that might differentially affect minority or low-income populations have been identified for most of the analyzed environmental factors. Because the local minority American

Indian communities are culturally affiliated with many archaeological sites, human remains, and traditional cultural places within the region, effects on these resources may represent differential levels of impacts to these local minority groups. Effects on such cultural resources are being considered in compliance with numerous laws in addition to NEPA.

The Winnemucca and Battle Mountain colonies were established by Executive Order in 1917 for the homeless Shoshone living near Winnemucca and Battle Mountain. The Winnemucca Reservation encompasses two noncontiguous parcels that total 360 acres. Northern Paiutes from the Fort McDermitt Reservation, which overlaps the Nevada-Oregon border to the north, moved to the Winnemucca Colony, and today they out number the Western Shoshone. In 1996, the Winnemucca reservation population was 61. A tribal council, organized under a constitution adopted in 1971, governs this community (Tiller 1996:430-31).

The Battle Mountain Colony is one of four separate Western Shoshone colonies that comprise the Te-Moak Tribe of Western Shoshone Indians, a coalition government with headquarters in Elko, Nevada. The Elko Colony first adopted a constitution for this form of government in 1937, under the terms of the Indian Reorganization Act of 1934. This constitution was approved in 1938 and amended in 1982 (Tiller 1996:427). The South Fork Band joined the coalition government in 1941, Battle Mountain Colony in 1977, and Wells Colony in 1981 (Clemmer and Stewart 1986:549). The Te-Moak Tribal Council has jurisdiction over tribal lands, although the colonies retain sovereignty over local colony affairs, and each has its own separate governing council.

The Battle Mountain Colony has its own tribal council, organized under the Indian Reorganization Act of 1934, with its charter ratified on 12 December 1938 and its constitution and bylaws sanctioned on 26 August 1982. In 1996, the Battle Mountain Reservation, encompassing two noncontiguous parcels totaling about 683 acres, had a population of 165.

Other Western Shoshone reservations within approximately 75 to 125 miles of the project area include the Odgers Ranch, Ruby Valley, Ely, Duckwater, and Yomba colonies. Western Shoshone and Northern Paiutes reside together on the Duck Valley Reservation and at the Fallon Colony. Other Northern Paiute reservations within this region include the Lovelock Colony, and the Summit Lake, Pyramid Lake, and Walker River reservations.

Agriculture, gaming, government, mining, services, and wholesale and retail trade are the principal sources of employment in both Humboldt and Lander counties, with mining clearly dominating the job market. There is relatively little economic opportunity on the Winnemucca and Battle Mountain reservations. At Battle Mountain, one source of tribal income is a smoke shop/convenience store, and a newly formed tribal business, the Battle Mountain Filter Service Company, which cleans filters for nearby mines and employs three full-time employees (Tiller 1996:413). New mining activity in the area may increase business for this tribal enterprise. Section 4.16 of the DEIS documents that the Trenton Canyon Project would have insignificant economic and social impacts within the context of current conditions within Humboldt and Lander counties.

The Proposed Action or other project alternatives also are not projected to have significant adverse impacts on surface water or groundwater, nor is any loss of wetland habitat anticipated. The Western Shoshone have expressed special concern for the five permanent and three intermittent springs in the project area. Currently, the water quality in some of these springs exceeds some standards for aquatic life and agriculture and they have been degraded by previous permitted uses. No significant impacts to these springs are projected.

Traditionally, the Western Shoshone used several hundred plant species for foods, medicines, and other uses (Smith 1972; Thomas, Pendleton, and Cappannari 1986:272). Western Shoshone consultants identified numerous plant species of traditional cultural significance, including Douglas rabbitbrush (or possibly hairy low rabbitbrush), buckwheat, goldenrod (or yellow daisy), wild carrot (yampa), elder berry, gooseberry, choke cherry, balsum root, lichen, primrose, and another unidentified mint-like plant. These were used as foods, medicines, and perhaps in ceremonies. These plants are fairly common throughout the region so any losses due to the proposed project are not considered to be a significant adverse impact. The Western Shoshone also report having hunted sage grouse within the project area, but any strutting grounds that may have been within the direct impact zones of the project area are no longer being used. The Proposed Action or other project alternatives would affect no threatened or endangered plant or animal species, or candidates for such designation, or other sensitive species identified by the BLM. Natural vegetation and wildlife habitat would be lost within the proposed project area, but post-mining reclamation is expected to create stable plant communities that would be able to sustain wildlife and livestock levels comparable to pre-mine conditions. The long-term loss of approximately 348 acres would be the equivalent of 24 animal unit months of grazing and is projected to increase deer mortality somewhat, especially during periods of drought or heavy snow. These effects are not considered to be significant adverse environmental impacts within the region.

4.17B Supplemental Cultural Resources Information

Cultural resources are protected by a number of federal laws. The National Historic Preservation Act (NHPA) provides for consideration of historic properties listed on or eligible for listing on the National Register of Historic Places. The Archaeological Resources Protection Act defines procedures for permitting study of archaeological sites on federal land and provides opportunity for affiliated American Indian communities to review and comment on plans for such studies. The American Indian Religious Freedom Act and Executive Order 13007 direct federal agencies to provide access for American Indians to sacred sites for ceremonial purposes. The Native American Graves Protection and Repatriation Act stipulated that lineal descendants or cultural affiliated groups be consulted to determine the treatment of human remains, associated funerary objects, sacred objects, or objects of cultural patrimony discovered on federal land.

In addressing all of these requirements in conjunction with preparation of the DEIS, the BLM has contacted the tribal governments of the Te-Moak Tribes of Western Shoshone, Winnemucca Colony, Fort McDermitt Reservation, Duck Valley Shoshone-Paiute Tribes, and the Shoshone-Bannock Tribes of Fort Hall. BLM also contacted other related interest groups including the Western Shoshone National

Council, Western Shoshone Historic Preservation Society, and Carrie Dann, a Western Shoshone from Crescent Valley who is an advocate for Shoshone cultural preservation. Individuals from the Battle Mountain, Duck Valley, and Crescent Valley have participated in field trips to the project area in October 1996, and May and June 1997. The Battle Mountain and Elko BLM districts continue to meet monthly with the council of the Te-Moak Tribe of the Western Shoshone for government-to-government discussions. This is a forum for ongoing consultations regarding not only the Trenton Canyon Project but also the entire BLM program in northeastern Nevada.

Intensive cultural resource surveys encompass all impact zones of the project except for three small areas of a proposed access road. The results of these surveys and tribal consultations are summarized in Section 3.17 of the DEIS and a supporting technical report. Four archaeological sites, evaluated as significant because they could yield important information about the prehistory of the region, are likely to be removed by the Proposed Action. Another six similarly significant archaeological sites are within a 500-foot-wide buffer zone defined around the direct impact zones of the Proposed Action. The BLM would oversee the preparation of a plan to recover important information from those archaeological sites that cannot be avoided. The plan would be prepared in consultation with the State Historic Preservation Office and the Western Shoshone and other interested tribal groups. BLM anticipates that a treatment plan would be developed and approved that would allow BLM to conclude that the proposed project would have "no adverse effect," as defined by regulations for *Protection of Historic Properties* (36 CFR Part 800), which implements Section 106 of the National Historic Preservation Act.

The BLM is continuing to consult with the Western Shoshone about places within the project area of traditional cultural significance. The archaeological surveys have not resulted in the discovery of any features that appear to be human burials, but Western Shoshone representatives have indicated that they believe such graves are present. BLM is continuing to investigate this possibility, and would comply with regulations implementing the Native American Graves Protection and Repatriation Act (43 CFR Part 10) if human remains, funerary objects, sacred objects, or objects of cultural patrimony should be discovered within the project area. These regulations require notification and consultations with lineal descendants or cultural affiliated tribes to determine the treatment of such remains. A written plan of action would be prepared specifying the kinds of objects to be considered protected cultural items, the specific information that would be used to determine custody of the objects, how those objects would be treated and handled, what archaeological recording and analysis would be performed, how tribal officials would be contacted, how the objects would be traditionally treated and repatriated, and the nature of the report that would be prepared.

Page 4-84, insert new Table FEIS-4, Potential Mitigation and Monitoring Measures. In the DEIS, potential mitigation measures were identified and recommended to reduce or eliminate impacts to environmental resources. During the comment period for the DEIS, several commentors identified other potential mitigation measures. The table is a summary of potential mitigation and monitoring measures.

Page 4-85, replace the last sentence of the first full paragraph with: "Because the cumulative effects of the Proposed Action, No Action, and other project alternatives would not be measurably different, a cumulative effects analysis was completed for the Proposed Action only."

Page 4-85, add the following sentence to the end of the second paragraph: "Exploration surface disturbance does not include individual projects of less than five acres."

Page 4-85, Section 4.18.1, revise the first sentence to read as follows and insert a second sentence: "Dominant activities in the thirty square miles of land surrounding the Trenton Canyon deposit are grazing, mining, and power generation (the Valmy Power Plant). The Valmy Power Plant is located in Section 29, T35N, R43E."

Page 4-87, Table 4-11, should be revised as shown.

Page 4-88, Section 4.18.2, Proposed and Reasonably Foreseeable Future Activities, second paragraph, after the last sentence, add the following: "Reclamation concurrent with mining would occur and some entire components of the mines may be reclaimed before mining is finished (i.e., at the Trenton Canyon Project, approximately 75% of the disturbed areas would be reclaimed during the reasonably foreseeable future, or 10 year analysis period)."

Pages 4-89 through 4-101 of the DEIS, the cumulative effects section for Water Resources, Geology and Minerals, Air, Soils, Vegetation and Special Status Plant Species, Wetlands & Riparian Habitat, Wildlife, Fisheries, and Special Status Animal Species, Range, Visual, and Cultural have been revised as follows.

4.18.3 Water Resources

The cumulative assessment area for water resources is shown as the study area boundary on DEIS Figure 3-1. The primary geologic feature in the area is Battle Mountain. There are several perennial creeks which drain the area and flow into the Humboldt River. Because the mines evaluated in this cumulative effects analysis are operated under the same federal and state regulations, existing and future mine operations in the study area are assumed to contribute to increased sedimentation to the creeks from disturbed areas similar to the Trenton Canyon Project. While non-mitigated sedimentation would result in significant impacts, mines in the cumulative effects area have similar mitigation measures to reduce this sedimentation to insignificant levels using silt fences or straw bale sediment controls, interceptor ditches or channels, sediment catchment basins, energy dissipation structures, revegetation and reclamation procedures, channel lining if warranted by design flows and implementing other Best Management Practices under Nevada State regulations and BLM Surface Management Regulations. Other mines that contribute to the non-significant cumulative sedimentation effect include Lone Tree Mine, Marigold Mine, and Battle Mountain Gold (also refer to the revised Table 4-11 of this FEIS).

Because of the effectiveness of mitigation in controlling sedimentation, the cumulative impacts would be limited and would not be significant.

Table FEIS-4
Mitigation Matrix

Resource	Proposed Action	Potential Mitigation and Monitoring Measures
SURFACE WATER		
Probable Effect on Surface Water	Medium potential for sediment loading within 500 feet	The proposed sediment control features that are design features of the Proposed Action and other action alternatives are described in DEIS Sections 2.4.7.1 and 4.2.1.2. To prevent erosion during mining, flat surfaces on overburden disposal area tops could be sloped back. This would prevent water from flowing over the overburden disposal area crest. During mining, angle of repose disposing results in course material on the outside of the overburden disposal areas, especially at the toe of the slope. This results in energy dissipation and prevents the water from flowing in streams or rills. Any additional erosion and sediment loss from roads, overburden disposal areas, and other project features with steep slopes would be controlled by implementing temporary siltation berms, run-off interceptor trenches, small sediment catch basins, installing culverts or french drains beneath drainages that the catchment berm crosses, or other approaches as consistent with Nevada Best Management Practices. Such measures would be applied as appropriate. Monitoring for suspended solids, turbidity, geochemistry, and waste testing (static test, leaching test, and kinetic tests if warranted) throughout the life of the project. Modifications would be made to the overburden disposal plan as required. In the event that water quantity to Mud Springs is reduced as a result of the Proposed Action, alternate water sources for wildlife and livestock would be developed.
GROUNDWATER		
Probable Effect on Groundwater	No impacts expected	No mitigation measures have been developed. Periodic groundwater monitoring in the vicinity of the mine would continue in order to assess groundwater quality. If results of the monitoring program indicate significant impact to groundwater, mitigation measures would be implemented consistent with NDEP requirements.
HAZARDOUS MATERIALS		
Release or spill of Hazardous Materials	No impacts expected	No additional mitigation or monitoring measures would be required beyond those proposed in the Plan of Operations, Reclamation Plan, or required by NDEP.
GEOLOGY AND MINERALS		
Future mineral access	No impacts expected	If fossils are discovered during mining activities, the operators would contact BLM to determine the procedures necessary for recovery or avoidance of fossil remains. Mineral economics would be carefully scrutinized to minimize the likelihood of burying potentially economic gold reserves. Waste rock would be sampled in accordance with a State permit. If sulfide material is encountered, it would be handled in accordance with an approved waste rock materials management plan.

Table FEIS-4
Mitigation Matrix

Resource	Proposed Action	Potential Mitigation and Monitoring Measures
AIR		
PM$_{10}$ from Point and Non-Point Sources	48.5 μg/m^3 (Standard is 150 μg/m^3) 36.1 tons/year	As part of the air quality operating permit, fugitive emissions for the Proposed Action and any of the alternatives would be minimized by clearing only as much land as can be adequately controlled by watering, chemical stabilization or other controls approved by the Nevada Bureau of Air Quality. Specific dust control measures would include watering or chemically stabilizing unpaved haul roads, access roads and ore stockpiles. Concurrent reclamation and revegetating with bunch grasses and shrubs as part of the proposed reclamation plan mitigates long-term fugitive dust emissions from disturbed areas. No additional mitigation or monitoring measures would be required beyond those proposed in the Plan of Operations and Reclamation Plan or required by the Bureau of Air Quality.
SOILS		
Surface Disturbance	2,682 acres	Topsoil would be reclaimed where possible. Growth medium material (topsoil) would be removed during construction, stockpiled, and stabilized with vegetation until it is returned to the reclaimed areas. After reclamation, the establishment of vegetation on overburden disposal area surfaces prevents erosion. Interslope benches can be sloped back to prevent water going over the crest.
VEGETATION AND SPECIAL STATUS PLANT SPECIES		
Temporary Loss of Vegetation	2,109 acres	The primary mitigation measure for the loss and degradation of vegetative cover is implementation of the reclamation program during mining, wherever possible, and following closure of the mine. The reclamation plan has been developed as part of the Plan of Operations. This program describes preparation of disturbed sites for revegetation, the seed mix which shall be used for each site, and a monitoring plan designed to determine the success of the reclamation effort. Native Americans would be included in selecting native species that may be of traditional value. No additional mitigation or monitoring measures would be required beyond those proposed in the Plan of Operations and Reclamation Plan.

Table FEIS-4
Mitigation Matrix

Resource	Proposed Action	Potential Mitigation and Monitoring Measures
WILDLIFE, FISHERIES, AND SPECIAL STATUS ANIMAL SPECIES		
Loss of Habitat for Sensitive Species or Species of Concern	Loss of rocky cliffs and crevices may displace sensitive bat species	Many of the mitigation measures designed to reduce potential impacts to wildlife resources are contained within the Plan of Operations and Reclamation Plan. Record wildlife mortality in the project area due to vehicle collisions and other injuries associated with mining operations or equipment. Monitor benthic invertebrate populations throughout the life of the project. The resulting data would be provided to the BLM and NDOW to determine whether additional protective measures are needed. Survey for sage grouse in T32N, R43E, Sections 19 and T32N, R42E, Section 1, during the breeding season (March 1 - May 15) and implement protective measures (e.g., seasonal site-specific closure of lek areas) to protect any active leks or brood areas, if present. While no roosting bats were encountered during the baseline surveys, in the event that bat colonies are discovered during mining, appropriate mitigation measures could be considered by the BLM. These measures include: • Limiting mining disturbance to periods in the spring before the maternity season, or in the fall prior to hibernation. It is recommended that disturbance to bats be avoided during the summer maternity period or during winter hibernation, • Providing replacement bat habitat (under the direction of a bat biologist) by burying culverts under overburden disposal areas in the new mine area and gating and monitoring for bat activity; or using covered worn out haul truck tires on end inline, and • Situating water tanks away from the zones of impact (i.e. at Mud Spring and Cottonwood Canyon). Reclamation of the area following completion of mining operation is described in the Reclamation Plan. Successful reclamation at the mine sites would return much of the disturbed area to a condition suitable for wildlife. Seed species for reclamation must be approved by the NDEP and BLM and be free of weeds and exotic plant species.
Loss of Habitat for Mule Deer and Other Big Game Species	1,220 acres	
Loss of Habitat for Sage Grouse, Chukar, and other Upland Game Species	2,109 acres of vegetation would be removed	

Table FEIS-4
Mitigation Matrix

Resource	Proposed Action	Potential Mitigation and Monitoring Measures
WETLANDS AND RIPARIAN HABITAT		
Discharge of Fill into Waters of the U.S.	2.02 acres	To reduce the impact of sediment erosion during mining operations under the Proposed Action, sediment control structures could be placed at the toe of each overburden disposal area. Minor design changes would be implemented where needed to maintain downstream flow and to minimize the effect on the drainage into site wetlands. Additional minimization, mitigation and monitoring measures may be required in order for the project to satisfy Section 404(b)(1) guidelines and qualify for a Section 404 permit.
RANGE		
Loss of AUMs	Temporary or permanent loss of AUMs	To reduce the impacts of the Section 21 heap leach pad, livestock watering troughs could be developed to allow grazing to occur over a greater portion of the North Buffalo allotment thereby reducing impacts on livestock.
RECREATION		
Recreation Opportunity	Loss of use of three mine areas during mining and reclamation	To promote public safety, a perimeter berm is proposed around the pits and warning and stop signs would be placed at the intersection of the road from Valmy with the primary mine access road.
LAND USE AND ACCESS		
Consistency with land use management plans	Mineral extraction is consistent with BLM planning objectives	A perimeter berm is proposed to be constructed around the pits and warning and stop signs would be placed at the intersection of the road from the town of Valmy with the primary mine access road. Land uses would not be altered by the project; therefore, no additional mitigation or monitoring measures would be required beyond those proposed in the Plan of Operations and Reclamation Plan.
VISUAL		
Compatibility with VRM objectives	Visual contrasts consistent with VRM Class III and IV lands.	The following elements of the reclamation activities provide for long-term aesthetic improvement: • The slope gradients on embankments were designed to reflect the naturally rolling, rounded forms suitable to the region, and • Plant species for revegetating overburden disposal area slopes were selected that suggest the natural vegetation color and texture. Options for reducing visual contrast of high walls would be further examined (e.g., artificial desert varnish on the pit highwalls).

Table FEIS-4
Mitigation Matrix

Resource	Proposed Action	Potential Mitigation and Monitoring Measures
NOISE		
Blasting, drilling, loading ore, and truck hauling	Source and intensity same as No Action	No mitigation or monitoring for noise would be required.
SOCIAL AND ECONOMIC VALUES		
Employment	Employees for Trenton Canyon would have jobs longer than under No Action. Revenues would be generated for 5-10 years.	No mitigation or monitoring measures are proposed for fiscal, social, community, or economic resources.
CULTURAL RESOURCES		
National Register eligible sites affected	Four NRHP sites would be directly impacted.	No disturbance shall occur in areas that have not been subject to a Class III inventory or to sites that have been inventoried but for which consultation is not complete until the sites have been inventoried, reviewed, and approved by the BLM and Nevada SHPO. The National Register eligibility of any sites identified would be determined by the BLM in consultation with the Nevada SHPO and appropriate mitigation would be developed and approved by the BLM and the Nevada SHPO and implemented. No disturbance shall occur within or immediately adjacent (within 100 feet) to the boundary of sites 22-6187, -6204, -6218, or -6243 prior to implementation of at least the field phase of a treatment plan that has been reviewed and approved by the BLM and the Nevada SHPO. Impacts to these four prehistoric properties may be determined to have "no adverse effect" if a treatment plan is prepared, approved by the BLM and the Nevada SHPO, and subsequently implemented.
Ethnographic Sites	Sites would be subject to disturbance	Impacts would occur to ethnographic sites that may be determined National Register eligible. Consultation regarding this potential impact is currently taking place between the BLM and the Western Shoshone. No disturbance shall occur within or immediately adjacent to the boundary of a potentially National Register eligible ethnographic property prior to the completion of all consultations required by law, and, as appropriate, implementation of at least the field phase of any treatment plan prepared to address impacts to that site. Any such treatment plan must be reviewed and approved by the BLM and the Nevada SHPO. The Western Shoshone would be asked to participate as a concurring party in the development of any such treatment plan.

Table 4-11 (Revised)
Current and Reasonably Foreseeable Future Surface Disturbance in the Region*

Map Reference Number (Fig 4-7)	Facility Name and Company	Existing and Permitted (acres)	Proposed Action (acres)	Reasonably Foreseeable Future Actions (acres)	Total (acres)	Status/Comments
6	**Trenton Canyon Plan of Operation - Proposed Action** **Newmont**	**486**	**1,740**		**2,226**	
7	**Trenton Canyon Exploration Consolidation** **Newmont**	**716**	**-260****		**456**	**exploration drill sites and roads**
1	Buffalo Valley Mine	146			146	mining and exploration
2	Lone Tree Mine Newmont	3,617			3,617	approximately 700 acres of the 3,617 acres of surface disturbance is located north of I-80
3	Marigold Mine Rayrock Resources	1,344		2,238	3,582	proposed for 1998, 882 acres; foreseeable future acres 1,356
4	Buffalo Mountain	18			18	reclamation activity only
5	Stone House	126			126	
8 and 9	Battle Mountain Gold	3,537		1,545	5,082	
10	Brass Ring Resources	18			18	exploration and reclamation
TOTAL		10,008	1,480	3,783	15,271	

* This table does not include individual mining and exploration disturbances of less than five acres.

**The disturbance credit represents surface area common to the exploration plan and the Proposed Action.

The Trenton Canyon Project would not contribute to the withdrawal of surface water or groundwater through pumping. The acreage removed from the watershed by open pits and leach pads (400 to 600 acres) is small relative to entire watershed size (19,500 acres), and is mitigated by increased runoff from disturbed acreage (300 acres). No water is diverted from one major watershed to another (i.e., all water diverted within the current Cottonwood Creek watershed is returned to Cottonwood Creek). Water required for mining operations would be supplied by the existing water supply pipeline directly from the Lone Tree Mine. Since this volume of water is already included in the estimated losses due to pit dewatering at the LTM, the additive effect of the proposed project on the regional water resources would be negligible. Groundwater drawdowns are not anticipated for the Marigold Mine expansion, although a portion of Trout Creek was diverted and the need for additional water supply wells would be assessed as part of the amended plan of operations (Rayrock Mines, Inc. 1997).

The Trenton Canyon Project has little potential for adverse geochemical effects on surface or groundwater. Estimated long term seepage from proposed stockpiles is extremely small (in aggregate less than 4 gpm), and the estimated quality of current Cottonwood Creek flow when mixed with this seepage meets state and federal water quality criteria; therefore, the proposed project would not contribute to any significant cumulative effect with respect to water quality.

4.18.4 Geology and Minerals

Since the entire region is intensely mineralized, metallic and non-metallic deposits are numerous. Minerals-related activities prevail within the region for the principal form of enterprise as could be expected from such extensive deposits. The cumulative effect on geology and mineral resources include removal and handling of overburden, removal of ore from mineral resources, and the changes in the topography resulting from overburden disposal areas and the open mine pits for the past, present, and future mines (refer to Figure 4-7 in the DEIS). These mines include Lone Tree Mine, the North Peak and Valmy deposits, the Marigold Mine, the Battle Mountain Gold Mine, the Buffalo Valley Mine, Stone House, and Brass Ring Resources.

Historic surface exploration and drilling activities are included in the revised Table 4-11 in the FEIS. Mining disturbance in the area has included exploration (road construction, drilling, trenching), open pit mining, overburden storage, heap leaching, ore processing, and tailing disposal.

The total area affected by mining related activities at the aforementioned projects under the past and present surface disturbance is estimated to be 10,008 acres (including both private and public lands). The Proposed Action at Trenton Canyon and the proposed expansion at Marigold Mine would create an additional 2,362 acres of disturbance, increasing the surface disturbance by 25 percent.

Gold mining has been and will continue to be a major activity in the region. Continued mining activity would result in additional acreage allocated to open pits, overburden disposal areas, leach pads, tailing impoundments, ore processing facilities and supporting development. The degree that mining activity would increase in the future has been predicted by the Bureau of Mines and Bureau of Land

Management in a document entitled "Mineral Resources of the Winnemucca-Surprise Resource Assessment Area" (USDI/US Bureau of Mines 1996). Observations made over 1990-1994 show that production of copper, lead, tungsten, mercury, iron ore, manganese, and zinc have declined in the entire Resource area. Gold and silver and some nonmetallic commodities are the highest producers and should continue into the reasonably foreseeable future.

4.18.5 Air

Most of the direct project-related air quality impacts would be confined to the project area within portions of the Pumpernickel, Clovers, and Buffalo Valley Hydrographic Sub-basins. The potential for cumulative air quality impacts are from emissions related to fugitive dust from wind erosion around the existing and proposed mine developments. The Trenton Canyon Project would contribute no major point sources to the region. Revised Table 4-13 of this FEIS demonstrates the total TSP and PM_{10} emissions within the cumulative effects area resulting from mining-related surface disturbance (this table does not include disturbances from actions less than 5 acres in size). Projected emissions from currently permitted activities including exploration related to the Trenton Canyon Project are 3,803 tons per year of total suspended particulate (TSP) and 1,701 tons per year of particulate matter of 10 microns or less in size (PM_{10}).

Fugitive air emissions projected within the cumulative effects area could result in a maximum of 5,802 tons per year TSP and 2,596 tons per year (PM_{10}). Please refer to DEIS Figure 3-11 and new Figure 3-11A of this FEIS for the hydrographic basins within the cumulative effects area. Also, Figure 4-7 in the DEIS covers the cumulative effects area for Air.

Only a fraction of these emissions would occur in the atmosphere on any one day of the ten year cumulative analysis period because of the dispersed nature of mining and exploration activities. It is estimated that the greatest quantity of emissions would occur at a point in time when the Lone Tree Mine, Trenton Canyon Mine, and Marigold Mine are fully operating. Given the development schedules for each of these facilities, these three mine areas would be under full operation during late 1998 through 2003.

4.18.6 Soils

The soils cumulative effects area is represented by Figure 4-7 in the DEIS. Total estimated surface disturbances would increase by 1,480 acres (approximately 15%) with the Trenton Canyon Project and an additional 3,783 acres (approximately 38%) with reasonably forseeable actions (revised Table 4-11). However, the area actually exposed at any particular point in time would be considerably less. Concurrent reclamation would occur during mining and would reduce overall acres disturbed. Soil

Table 4-13 (Revised)
Projected Air Emissions from Surface Disturbance Within Portions of the Pumpernickel, Clovers, and Buffalo Valley Hydrographic Basins

Map Reference Number (Fig 4-7)	Facility Name and Company	Existing and Permitted Emissions, TPY		Proposed Action Emissions, TPY		Reasonably Foreseeable Future Actions Emissions, TPY		Total TSP Emissions TPY	Total PM_{10} Emissions TPY
		TSP	PM_{10}	TSP	PM_{10}	TSP	PM_{10}		
6	**Trenton Canyon Plan of Operation - Proposed Action** **Newmont**	**185**	**83**	**661**	**296**			**846**	**379**
7	**Trenton Canyon Exploration Consolidation** **Newmont**	**272**	**122**	**-99****	**-44****			**173**	**78**
1	Buffalo Valley Mine	55	25					55	25
2	Lone Tree Mine Newmont	1,374	615					1,374	615
3	Marigold Mine Rayrock Resources	511	228			850	380	1,361	608
4	Buffalo Mountain	7	3					7	3
5	Stone House	48	21					48	21
8 and 9	Battle Mountain Gold	1,344	601			587	263	1,931	864
10	Brass Ring Resources	7	3					7	3
TOTAL		3,803	1,701	562	252	1,437	643	5,802	2,596

* This table does not include individual mining and exploration disturbances of less than five acres.

**The disturbance credit represents surface area common to the exploration plan and the Proposed Action.

loss could occur over the entire disturbed area due to wind and water erosion. The rate and extent of soil loss would depend on the rates and sequence of facility development, topography and location of exploration and mining activities, and the meteorological conditions. Implementation of reclamation concurrent with mining would substantially reduce the soil loss from roads and overburden disposal areas.

4.18.7 Vegetation and Special Status Plant Species

The cumulative effects study area for vegetation resources includes lands within the Copper Canyon and North Buffalo grazing allotments (DEIS Figure 3-17). The Proposed Action would not result in the cumulative loss of federally listed threatened or endangered plant species, or any habitat for such species. There would be an incremental loss of habitat suitable for supporting populations of the windloving buckwheat, a BLM sensitive species.

Vegetation throughout the region is similar to that described for the Proposed Action at Trenton Canyon, with sagebrush communities as the dominant vegetation cover. There are isolated stands of juniper trees within the sagebrush communities. The cumulative effect of the Trenton Canyon, Lone Tree, Marigold Mine, Buffalo Mountain, Stone House, Buffalo Valley Mine, and Battle Mountain Gold Mine over the ten years of mining operations would result in a maximum disturbance of 15,253 acres of vegetated lands (revised Table 4-11). The loss of vegetation due to the Trenton Canyon Project (including the No Action Alternative) represents less than 15% of the cumulative disturbance.

Sagebrush cover types are not considered sensitive and are common throughout the Battle Mountain region. Vegetation within the cumulative effects area that would be disturbed by the Proposed Action or alternatives includes 16.5 acres of black sagebrush, 3.6 acres of greasewood, 79.6 acres of low sagebrush, 157.9 acres of mountain big sagebrush, 235.9 acres of salt desert shrub, and 1,615.2 acres of Wyoming big sagebrush (also refer to Table 4-9 in the DEIS).

Reclamation plans associated with the different mining operations are designed to restore the vegetation within the area to a pre-mine condition which would be capable of supporting wildlife and livestock populations. The revegetation process is carefully monitored under both state and federal regulatory programs to ensure reclamation goals are met within three years after mining ceases.

4.18.8 Wetlands & Riparian Habitat

The cumulative effects area for wetlands and riparian habitat is shown as the study area boundary on DEIS Figure 3-1. Most existing and future mine operations in the study area would contribute to a small amount of increased sedimentation to the creeks from disturbed areas. Because of the effectiveness of Best Management Practices and mitigation proposed for the Trenton Canyon Project and other existing or future mine disturbances that are under permit by the State of Nevada and/or BLM, cumulative effects of sedimentation into wetlands or riparian areas would exist but would be immeasurable and insignificant. All impacts to jurisdictional wetlands would be indirect. A potential decrease in seasonal surface flows may indirectly impact wetland vegetation or riparian habitat, however these impacts would be expected to be immeasurable and monitoring will determine if there is a measurable effect. No other cumulative effects to wetlands or riparian habitat would occur.

4.18.9 Wildlife, Fisheries, and Special Status Animal Species

The cumulative impact assessment area for terrestrial wildlife, fisheries, and special status wildlife species is shown as the study area boundary on DEIS Figure 3-16. It includes public and private lands within the vicinity of Battle Mountain including the Cottonwood Creek, Trout Creek and Trenton Canyon Creek basins. Active mining, exploration, or reclamation activities that would be concurrent with the Trenton Canyon Project include Buffalo Valley Mine, Buffalo Mountain and Stone House exploration reclamation, Lone Tree Mine, Marigold Mine and expansion, and Battle Mountain Gold's Range Operations and Phoenix Project (revised Table 4-11 of this FEIS). There would be no cumulative effect on fisheries, aquatic species, or special status species because the Trenton Canyon Project would not directly or indirectly affect these resources.

Loss of habitat results from vegetation removal at mine sites and creation of overburden disposal areas, heap leach facilities, tailing ponds and impoundments, and solution ponds. Construction of roads and ancillary facilities for each of these mining operations also removes vegetation. Loss of these vegetation types, including 16.5 acres of black sagebrush, 3.6 acres of greasewood, 79.6 acres of low sagebrush, 157.9 acres of mountain big sagebrush, 235.9 acres of salt desert shrub, and 1,615.2 acres of Wyoming big sagebrush (refer to Tables 4-9 and 4-14 in the DEIS) represent loss of habitat for wildlife. The long-term presence of mining features would increase the potential for habitat fragmentation and loss of mammal, bird, reptile, and amphibian species.

While the immediate area of concern is the 235,730 acre cumulative impact core area, the larger resource-specific area considered is Management Area 15 as designated by NDOW. A total of 10,008 acres of wildlife habitat in the cumulative impact study area has been disturbed in the past or is currently disturbed (revised Table 4-11 of this FEIS). The cumulative impact of all current and projected mining activity within the study area represents less than 6% of the available wildlife habitat in the Battle Mountain Range. Wildlife habitat impacts associated with reasonably foreseeable activities (including the Proposed Action) would be approximately 5,263 acres, resulting in a cumulative impact of 15,271 acres over the projected next ten years. The existing and proposed disturbance for the Trenton Canyon Project (including the No Action alternative) represents 18% of this cumulative total.

Impacts to mule deer would include direct impacts from earthmoving and construction of various mine facilities and infrastructures that reduce deer habitat and that move deer from traditionally used areas, as well as losses from collisions with vehicles. Increased road access could also increase legal harvesting and poaching. However, mule deer losses are not expected to jeopardize the survival of mule deer in the Battle Mountain Range. Mule deer populations comparable to pre-project conditions would be expected following reclamation.

NDOW has identified approximately 61,519 acres of the Battle Mountain Range as mule deer range within the cumulative impact core area (Figure 3-16 of the DEIS). A total of 3,262 acres of mule deer range has been disturbed in the past. Mule deer habitat impacts associated with the proposed Trenton Canyon Project and alternatives would amount to 1,220-1,245 acres and reasonably foreseeable future activities would affect another 1,329 acres, resulting in a cumulative loss of 5,811 acres over the ten year analysis period. The Proposed Action and other alternatives would disturb approximately 2% of the total mule deer range. Combined disturbance from all of the mining activities would affect 10% of the available mule deer range in the region.

There would be a loss of upland habitats including rocky cliffs which provide habitat for raptors. Raptors are known throughout the cumulative effects area. Nest sites exist on the east slope of Battle Mountain; along the Humboldt River and in Pumpernickel Valley, north of the proposed project; and, within the Phoenix Expansion Area, south of Trenton Canyon. Mining operations within the area could result in the loss of potential nest sites. However, the majority of these nest sites are located adjacent to drainages which would be avoided by mining.

Sage grouse inhabit sagebrush and riparian corridors. Sage grouse leks potentially exist within the entire Great Basin in areas that combine open land, sagebrush cover, and riparian habitat. The Trenton Canyon Project would have a direct effect on sage grouse habitat, impacting 1,789.6 acres of sagebrush vegetation. Some reduction in populations of sage grouse may result from this loss of habitat. Effects could result from activities at Marigold Mine and exploration activities associated with Trenton Canyon if they occur near typical sage grouse habitat. These effects are in addition to the impacts from pre-existing mining and land use practices in the Battle Mountain area. The loss of historical lek sites and the long-term reduction in grouse populations in the area indicate that cumulative impacts to grouse are occurring from a variety of causes.

The initial winter survey did not reveal any abandoned mine workings suitable for bat hibernacula, although bats are prevalent in other areas around the Battle Mountain range. However, during the warm-season survey, an abandoned mine was discovered near the project site that could be a potential bat hibernaculum. Myotis species and the pallid bats have been recorded near the Trenton Canyon Project, and probably roost in rock crevices year-round on the project site. Bats may not occur in all the rock crevices surrounding the project; however, there would be an additive effect, the magnitude of which would depend upon the amount of disturbance to suitable habitat and the timing of the project disturbance.

Lands to be disturbed by the Trenton Canyon Project (as well as other mining projects within the Cumulative Effects study area) are scheduled to be reclaimed within the next ten years. Thus, it is reasonable to expect that disturbance associated with mining and other exploration activities, and perhaps even some portion of the base disturbance would be returned to the status of functioning wildlife habitat following successful reclamation.

4.18.10 Range

Cumulative impacts to range resources within the North Buffalo and Copper Canyon allotments include mining activities and operations at the Trenton Canyon Mine, Lone Tree Mine, Marigold Mine, and Battle Mountain Gold. If alternate water sources are provided, there would be no additive effect on water sources (i.e., springs, seeps, or surface waters) for livestock resulting from the Trenton Canyon Project.

Through surface disturbances, the past and present effect on range is the loss of approximately 700 AUMs on the North Buffalo and Copper Canyon allotments. The Trenton Canyon Proposed Action or other alternatives and expansion proposed at Marigold Mine could potentially affect an additional 165.2 AUMs based on the total area available within the allotment and an average carrying capacity of 14.3 acres/AUM. With the foreseeable future actions, an additional 202.9 AUMs could be potentially affected for a cumulative total of 1067.9 AUMs lost. Reclamation efforts over the ten year period would revegetate lands to pre-project conditions, therefore, the cumulative total of range AUMs lost would be reduced.

4.18.11 Visual

The cumulative effects study area for visual resources, shown on revised Figure 4-8 of this FEIS, includes the Buffalo Valley, the Cottonwood Creek basin, and the northwestern flank of the Battle Mountain range. This area includes much of the area visible from key observation points (KOPs) identified in Section 3.14 of the DEIS. Mining exploration and grazing within the cumulative effects area would not result in a significant or long-term visual impact. Foreseeable mining activities in the cumulative effects area are not expected to compromise the Visual Resource Management Objectives for Class III or Class IV lands, and cumulative visual impacts are expected to be minimal.

The Lone Tree Mine and Marigold Mine are the only mine projects that would have an additive visual effect from the observation points along the I-80 corridor. These projects would occur within the time frame of the Trenton Canyon Project. The cumulative surface disturbance could vary depending on the approval schedules, the timing, and the location of mine facilities becoming fully operational. However, cumulative surface disturbance does not represent the actual visual effect. For example, facility layouts for the Lone Tree Mine are configured so that only a small portion can be viewed from I-80. The visual effects of the Marigold Mine Expansion would be more prominent as it is not obscured by topography. In fact, it is in the foreground and instead obscures the Valmy mine area. Revised Figure 4-8 of this FEIS and Figures 4-9 and 4-11 of the DEIS illustrate the potential cumulative effect of the three mines operating concurrently prior to any reclamation.

After reclamation, impacts on visual resources would be the residual effects of those open pit highwalls that are facing the I-80 corridor; all other visual effects would be minimized through implementation of proposed reclamation measures. Figures 4-9 through 4-12 of the DEIS simulate the height and dimensions of the operations (as shown on revised Figure 4-8 of the FEIS) during mining and after reclamation as viewed from KOPs 1 and 2.

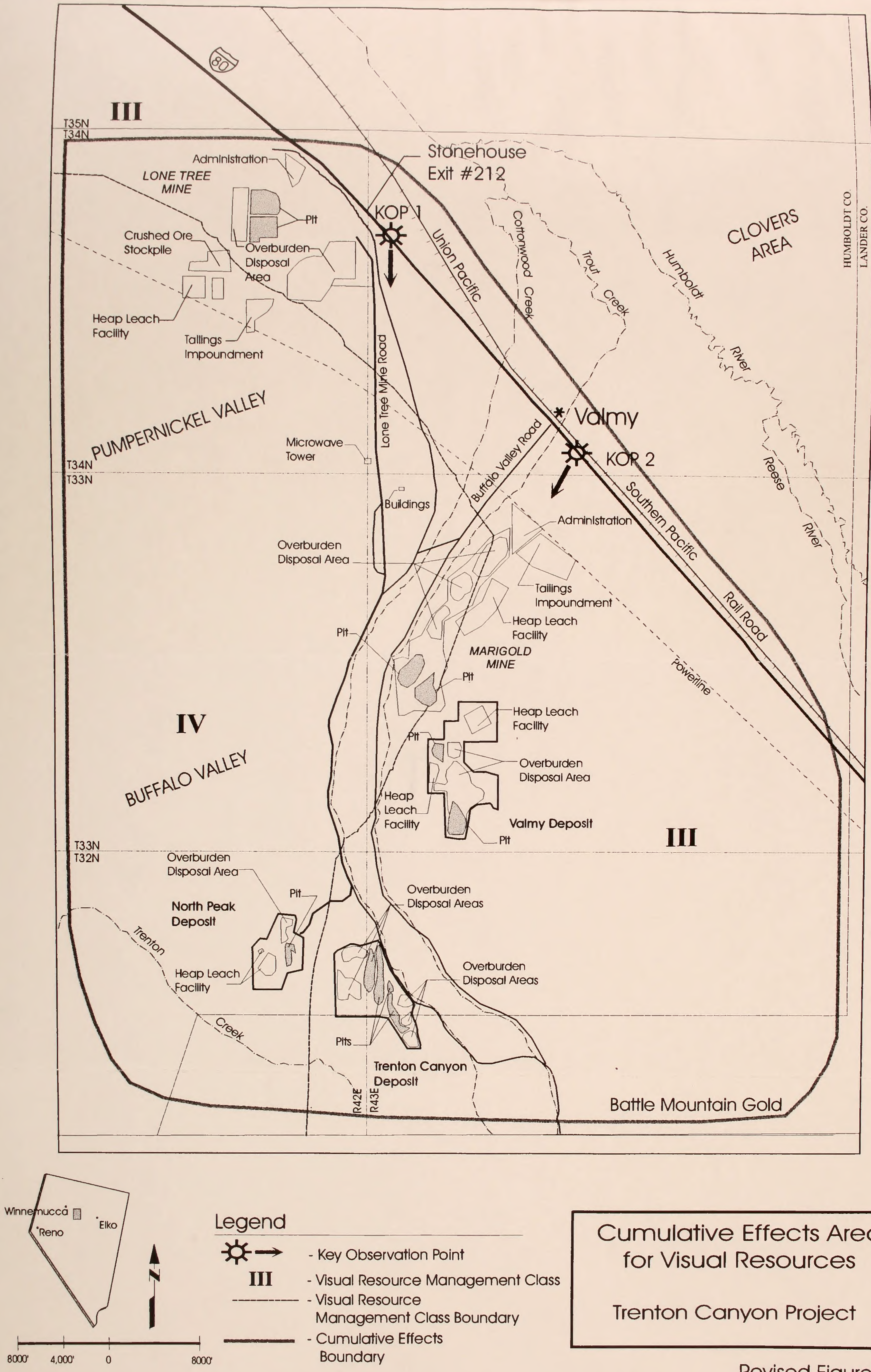
4.18.12 Cultural Resources

In 1989, BLM defined a 225-square-mile (144,000 acres) area for assessing cumulative effects of the Copper Basin-Copper Canyon Project on cultural resources (BLM 1989). This assessment area subsequently has been used in evaluating several other projects in the vicinity of Battle Mountain, and was adopted for this project as well. Within this assessment area, there are currently 14 active or closed mines with permitted surface disturbance of more than 8,000 acres and proposed additional disturbance of 1,210 acres prior to 2005 with possible future disturbance of another 2,100 acres.

Approximately 25 percent (36,522 acres) of the assessment area has been intensively inventoried for cultural resources. A total of 473 archaeological sites have been recorded, of which 60 have been determined to have significant values that make them eligible for inclusion on the National Register of Historic Places. The average density (1.05 National Register eligible sites per square mile) suggests there are approximately 240 National Register eligible sites within the assessment area (RCI 1997).

Cultural resources are nonrenewable, and prior mining activities have removed four significant archaeological sites, most of which are associated with historic mining activity in the Battle Mountain District. The Proposed Action would remove four additional significant sites. These are scatters of prehistoric lithic artifacts determined to be National Register eligible because of their potential to yield important information. Impacts of previous projects on significant sites have been mitigated by recovering important information through archaeological studies. Similarly, treatment plans would be developed and implemented in consultation with the State Historic Preservation Office and other interested parties to mitigate the impacts of the Trenton Canyon Project.

Once cultural resources are removed, they are lost to future appreciation, public interpretation, or scientific study. Archaeological research conducted to mitigate project impacts represents a short-term use of such resources. Archeological studies do not recover all information from archaeological sites, so the attrition of sites represents a cumulative loss. The dozen or fewer significant sites that may be removed by the proposed project represents 5 percent or less of the estimated total number of significant sites within the assessment area. The extent of prior mining activity has diminished and future mining will continue to diminish the cultural resources in the vicinity of Battle Mountain. Once sites are studied and removed, future opportunities are lost for study of these sites as new research methods and techniques are developed.



Cumulative Effects Area for Visual Resources

Trenton Canyon Project

Revised Figure 4-8

July 1998

Although no specific traditional cultural places have been identified as eligible for the National Register, local American Indians have expressed concerns for the cumulative effects of mining within their traditional aboriginal territories. These people have expressed concerns not only about archaeological sites to which they may claim affinity, but also about more general impacts to the environment. Although impacts to natural vegetation, wildlife, water, and air resources are not characterized as significant, the commitment of approximately 2.3 square miles to the proposed project would be another 1 percent increment to the altered landscape within the assessment area.

CHAPTER 5 - CONSULTATION AND COORDINATION

Page 5-5, insert the following new section 5.2.4.1, Native American Consultation.

5.2.4.1 Native American Consultation

In addressing all of these requirements in conjunction with preparation of the DEIS, the BLM has contacted the tribal governments of the Te-Moak Tribes of Western Shoshone, Winnemucca Colony, Fort McDermitt Reservation, Duck Valley Shoshone-Paiute Tribes, and the Shoshone-Bannock Tribes of Fort Hall. BLM also contacted other related interest groups including the Western Shoshone National Council, Western Shoshone Historic Preservation Society, and Carrie Dann, a Western Shoshone from Crescent Valley who is an advocate for Shoshone cultural preservation. Individuals from the Battle Mountain, Duck Valley, and Crescent Valley have participated in field trips to the project area in October 1996, and May and June 1997. The Battle Mountain and Elko BLM districts continue to meet monthly with the council of the Te-Moak Tribe of the Western Shoshone for government-to-government discussions. This is a forum for ongoing consultations regarding not only the Trenton Canyon Project but also the entire BLM program in northeastern Nevada.

Page 5-10, delete Sylvia Baca, acting Director. Tammy Manzini is not a Lander County Commissioner, replace with "County Commission Assistant stationed in Austin, NV."

CHAPTER 6 - PREPARERS AND CONTRIBUTORS

Page 6-3, "Crimmons" should be spelled "Crimmins."

APPENDIX A - METHODS USED TO ANALYZE WATER AND GEOCHEMISTRY

Page A-14, Table A-6, should be revised as follows:

Table A-6 (revised)
Summary of Estimated Surface Flows From Infiltration through Overburden Disposal Areas, Cottonwood Creek Watershed

	Sampling Location	
	CCS-06	CCS-1A
Average Baseflow and Interflow (Combined) gpm	25.7	184.4
Percent of Basin Covered by Proposed Overburden Areas	4.16	3.25
Aggregate Proposed Overburden Areas (gpm)	1.1	6.0
Proposed Overburden Area TC-1	NA	0*
Proposed Overburden Area TC-4	0.29	0.86
Proposed Overburden Area TC-5	0.26	0.77
Proposed Overburden Area TC-6	0.52	1.55

Source: Shepherd Miller, Inc. September 24, 1997.
*see discussion in DEIS Section 4.2.1.1

Page A-15, second numeral, reference to Table A-7, should reference Table A-6. Same page, second paragraph, first sentence, reference to Table A-7, should also reference Table A-6.

Page A-16, Section 4.2, first bullet, revise as follows: "*Sulfate*. The high sulfate in the seepage waters leads to mix values above the secondary drinking water standard of 250 mg/l at sample location CCS-04A. This location is at a spring that feeds into Cottonwood Creek at low flow rates. Mix concentrations are based on the conservative assumption that all seepage waters enter the spring. It is likely that only a small percentage of the seepage waters would enter the spring, resulting in sulfate concentrations below the secondary drinking water standard. Water from the spring entering Cottonwood Creek would be diluted; sulfate concentrations in the creek in the vicinity of CCS-04A were calculated to be below drinking water standards."

Page A-18, Table A-8, Station CCS-05 on 9/26/1996. Replace the sulfate exceedance of 426 mg/l with 208 mg/l.

Chapter 4

Comment Letters and Responses

CHAPTER 4 - COMMENTS LETTERS AND RESPONSES TO THE DEIS

This chapter includes copies of all public comments received in response to the Trenton Canyon Project DEIS. The BLM's responses to substantive comments are provided adjacent to the reproduced comment letters. Twenty-one comment letters were received on the DEIS. The comment period for the DEIS ended on April 14, 1998.

The following is a listing of the 21 comment letters and the person(s), agency(ies), and/or group(s) responsible for preparation of the letters:

Letter #	Name	Location	Date
1	Kevin Sur	Elko, Nevada	February 19, 1998
2	Mike Glock, Assistant District Engineer, State of Nevada, Department of Transportation	Winnemucca, Nevada	March 17, 1998
3	Chris Shaw, People for the USA, Humboldt County Chapter	Winnemucca, Nevada	March 26, 1998
4	Andreas Knudsen, International Work Group for Indigenous Affairs	Copenhagen, Denmark	March 27, 1998
5	Maud Naroll, State of Nevada, Nevada State Clearinghouse, Department of Administration	Carson City, Nevada	April 8, 1998
6	Rory Lamp, Biologist III, State of Nevada, Department of Conservation and Natural Resources, Division of Wildlife	Elko, Nevada	March 16, 1998
7	Michael J. Anderson, Staff Engineer III, State of Nevada, Department of Conservation and Natural Resources, Division of Water Resources	Carson City, Nevada	February 19, 1998
8	Bill Durbin, Geologists, State of Nevada, Department of Business and Industry, Division of Minerals	Carson City, Nevada	March 24, 1998
9	L.K. Freeman, State of Nevada, Department of Conservation and Natural Resources, Conservation District	Carson City, Nevada	March 8, 1998

Letter #	Name	Location	Date
10	James D. Morefield, State of Nevada, Department of Conservation and Natural Resources, Natural Heritage	Carson City, Nevada	March 30, 1998
11	Thomas J. Fronapfel, State of Nevada, Department of Transportation	Carson City, Nevada	March 20, 1998
12	State of Nevada, Department of Conservation and Natural Resources, Natural Heritage	Carson City, Nevada	Sept. 23, 1996
13	Thomas J. Fronapfel, State of Nevada, Department of Transportation	Carson City, Nevada	October 14, 1996
14	Rory Lamp, Biologist, State of Nevada, Department of Conservation and Natural Resources, Division of Wildlife	Elko, Nevada	October 21, 1996
15	David J. Farrel, Federal Activities Office, U.S. Environmental Protection Agency, Region IX	San Francisco, California	April 8, 1998
16	Tom Myers, Independent Hydrologist, Great Basin Mine Watch	Reno, Nevada	April 11, 1998
17	Nancy Kang, Biologist, Nevada Office Department of the Army, U.S. Army Engineer District, Corps of Engineers	Sacramento, California	April 13, 1998
18	James F. Devine, Senior Advisor for Science Applications, USDA U.S. Geological Survey		April 13, 1998
19	Jerald N. Hepworth, Director EHS, Rayrock Mines, Inc.	Valmy, Nevada	April 14, 1998
20	Robert D. Williams, Field Supervisor, US Department of the Interior, Fish and Wildlife Service, Reno Fish and Wildlife Office	Reno, Nevada	April 14, 1998
21	Christopher Sewall, Western Shoshone Defense Project	Crescent Valley, Nevada	April 14, 1998

Letter #1
COMMENTS

RECEIVED BLM
WINNEMUCCA

1998 FEB 25 PM 12: 58

Kevin Sur
3506 Valley Ridge Ave.
Elko, Nevada 89802

February 19, 1998

Rodney Herrick
Project Manager
Bureau of Land Management
Winnemucca Field Office
5100 Winnemucca Blvd.
Winnemucca, Nevada 89445

Dear Sir,

I would like to express my support for the rapid approval of the Trenton Canyon EIS now under review by your agency. The approval of this EIS should consider the following:

1. The project is located in an historic mining area with several active mines nearby.

2. Newmont Gold Company has a proven record of operating gold mines in a safe and environmentally responsible manner consistent with all laws of the state.

A 3. Approval will allow for continued operation of the Trenton Canyon Mine thus increase the positive economic benefit to the area and employees.

4. Miners and prospectors have the right to enter, explore and exploit minerals on the public domain. This right is granted by the General Mining Law of 1872.

For all of these reasons I urge you to approve the Trenton Canyon EIS without delay.

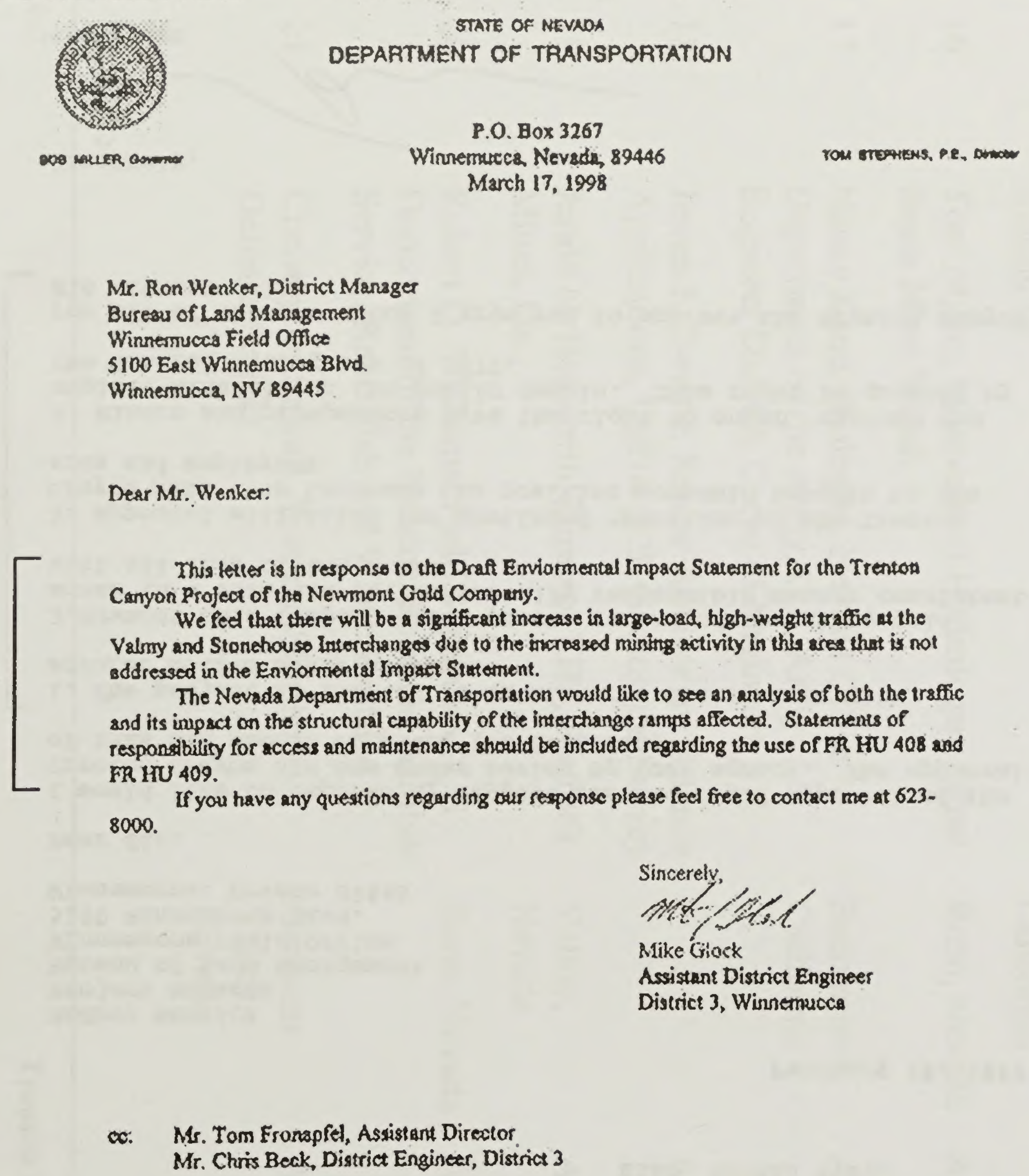
Sincerely,

Kevin Sur

RESPONSES

A These comments have been noted and will be considered in the final decision.

Letter #2
COMMENTS



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

BOB MILLER, Governor

P.O. Box 3267
Winnemucca, Nevada, 89446
March 17, 1998

TOM STEPHENS, P.E., Director

Mr. Ron Wenker, District Manager
Bureau of Land Management
Winnemucca Field Office
5100 East Winnemucca Blvd.
Winnemucca, NV 89445

Dear Mr. Wenker:

A This letter is in response to the Draft Enviormental Impact Statement for the Trenton Canyon Project of the Newmont Gold Company.

We feel that there will be a significant increase in large-load, high-weight traffic at the Valmy and Stonehouse Interchanges due to the increased mining activity in this area that is not addressed in the Enviormental Impact Statement.

The Nevada Department of Transportation would like to see an analysis of both the traffic and its impact on the structural capability of the interchange ramps affected. Statements of responsibility for access and maintenance should be included regarding the use of FR HU 408 and FR HU 409.

If you have any questions regarding our response please feel free to contact me at 623-8000.

Sincerely,

Mike Glock
Assistant District Engineer
District 3, Winnemucca

cc: Mr. Tom Fronapfel, Assistant Director
Mr. Chris Beck, District Engineer, District 3

RESPONSES

A There will be an increase in traffic at the Valmy and Stonehouse interchanges. This increase is not expected to be significant and is the result of a small increase in requirements for cyanide, carbon, reagents, and other materials and supplies. The increased traffic would stay within the required load limits for the interstate highway system. Approval of the Proposed Action or any of the alternatives would extend the life of the existing mine.

Letter #3
COMMENTS

Rodney Herrick, EIS Project Manager
BLM, Winnemucca district Office
5100 East Winnemucca Boulevard
Winnemucca, NV 89445

March 26, 1998

Rodney,

Our comments, for the record, concern the Trenton Canyon Draft EIS. I, as Secretary of the Humboldt County Chapter, People for the USA, have read the entire Draft EIS, and have reviewed my findings and comments with Tebeau Piquet, President of the Humboldt County Chapter. Thank you for this opportunity to comment.

Trenton Canyon Draft EIS Comments for the Record by Humboldt County Chapter, PFUSA:

A

Comment 1. We are in favor of the Trenton Canyon Draft EIS Agency Preferred Alternative (APA), as summarized on page S-5.

Comment 2. We agree, based on baseline studies conducted for this DEIS as discussed on page 4-24, that the proposed project will not have any residual adverse effects to the local or regional groundwater or surface water resources. This is due to the low amount of groundwater resource intercepted in pit floors based on drill results (Figure 3-3), and the low amount of intermittent surface flow that exists (page 3-2).

Comment 3. We are not in favor of backfilling of pits (page 2-43) due to the loss of potentially economic gold ore in pit floors that would occur if pits are filled.

B

Comment 4. We would like to add a minor comment on the mitigation of native bat habitat after mining which is not mentioned on page 4-53. Instead of possibly providing replacement bat habitat using culverts we suggest an equally effect but less costly alternative of using covered worn out haul truck tires on end inline. Diagrams of this proven, low cost method of mitigated bat habitat can be obtained from Bat Conservation International, P.O. Box 162603, Austin, TX 78716, www.batcon.org, phone #(512) 327-9721. Worn out haul truck tires are usually disposed of in Class 3 landfills. Using haul truck tires instead of culverts is a win-win for the company and the bats.

C

Comment 5. In summary, we are in favor of the Trenton Canyon Draft EIS Agency Preferred Alternative (APA) due to the positive benefit to state and local governments. Newmont Gold will provide state and local *ad valorem* taxes of 6.5% on net proceeds of gold sales (page 3-107). Federal taxes generated by employees will be substantial. In addition, the job multiplier effect (page 4-75) will be especially welcome due to ore depletion and closing of other local mines.

Sincerely,

Chris Shaw, 702 W. McArthur, #5, Winnemucca, NV 89445 Phone 702-625-3933

RESPONSES

A These preferences are noted and will be considered in the final decision.

B This mitigation measure has been noted and will be considered in the final decision.

C This comment is noted.

Letter #4
COMMENTS

IWGIA International Work Group for Indigenous Affairs

United States Department of the Interior
Bureau of Land Management
att: Rodney Herrick, Project Manager
Winnemucca Field Office
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445

APR 08 1998
DISTRICT OFFICE
WINNEMUCCA, NEVADA

Your Reference:
1793/3809
NV-020

Copenhagen, March 27, 1998

Dear Sir

Draft Environmental Impact Statement for Newmont Gold Company's "Trenton Canyon Project"

On behalf of IWGIA Denmark (International Work Group of Indigenous Affairs), I would like to thank you for the possibility of participating in the hearing process of the Trenton Canyon Project. IWGIA has been monitoring the discussions between the Bureau of Land Managment and the Western Shoshone Defense Committee and, in accordance with our conviction and the aim of our non-governmental organisation, has supported the Western Shoshone Nation in its stand for its treaty rights accordingly to the Treaty of Ruby Valley fo 1863.

With reference to the DEIS for the Trenton Canyon Project, our concerns regards three problems:

A: The project's need

B: The question of Western Shoshone sovereignty over the land in question and

IWGIA - FIOLSTRAEDE 10, DK-1171 COPENHAGEN K - TEL. +45-33124724 - FAX +45-33147749 - e-mail: iwgia@iwgia.org

RESPONSES

BLM is unable to respond to comments from citizens of foreign governments or international organizations. The Federal Land Policy and Management Act of 1976 is clear in its intent concerning public involvement. Under Section 103(d), "public involvement" means the opportunity for participation by affected citizens in rulemaking, decisionmaking, and planning with respect to the public lands. This policy is further promulgated through the National Environmental Policy Act where it clearly indicates its intent as a National Policy directed towards present and future generations of Americans (§101, 42 United States Code 4331). This is also supported through the Council of Environmental Quality implementing regulations which state under §1500.1 Purpose (b) "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and actions are taken".

C: Environmental concerns
A: The Project's need

We agree to the DEIS's statement that the worldwide demand for gold is increasing. According to Metals and Minerals Annual Review 1997, the overwhelming part of anual gold production is used for non-technical purposes such as jewellery, gold loans and bar hoarding.

Unfortunately, the majority of the jewellery has a modest commercial value and quite artless.

On the other hand, the gold price has been falling since 1987 and was below under the "magical" $300 line. For further information concerning the price development please see Datastream/ICV.

Conclusion:

IWGIA Denmark regard the necessity of meeting the global market's demand for more gold as very limited. Instead, producers should try to get a higher price for gold through a restricted supply while the quality of jewellery could be improved beyond the current common standard.

Letter #4 (Cont.)
COMMENTS

B: The sovereignty of Western Shoshene Nation over the area of the proposed Trenton Canyon Project and its surroundings

Before pointing out IWGIA's view concerning the question of sovereignty over large parts of Nevada and small portions of California, Idaho and Utah according to the Treaty of Ruby Valley of 1863, we would like to quote The Western Shoshone elder Carrie Dann talking about a rigg just in front of her home:

"Gold mining today is happening right at my front door. I sit up in my bedroom in the morning and the first thin I see through the trees is drill rigs. It's not a pretty sight. I look at them as death to my people - death to my beliefs. The earth is sacred. The water is sacred. The air is sacred. Gold mining is destroying these things. It's wasting millions of gallons of water. Some companies put it in ponds. Some just release it down the Humboldt River, and it leaves the valleys forever. In ponds, maybe there's a possibility that the water might eventually find it s way back to where it came from. But I don't see too much of that."

For more detailes of Ms Dann'view of gold mining, please see her article "Opening the Earth's Veins"

Though both the Bureau of Land Management and the various gold companies state that the project land is public one, these argues are based on very weak legal ground a the BLM has not been able to show how the U.S. had acquired Western Shoshone land titles.

In order to understand the complicated legal situation of the Western Shoshone, we would like to look into treaties and laws, which were written between the American Revolution and the 1860s and still give the legal ground for the claim of the Western Shoshone Nation to hold the sovereignty rights over, e.g., the project area.

The Northwest Ordinance of 1787 states, talking about the Indians of that territory, (that) "The utmost good faith shall always be observed towards the Indians, their lands and liberty shall never be taken from them without consent; and in their property, rights, and liberty, they never shall be invaded or disturbed, ..." (Journals of the Continental Congress, 32:340-41). As the Western Shoshone National Council is opposing goldmining on the nation's traditional territory, the "outmost good faith" is hard to spot.

Further, as the Ordinance has been re-enacted into by the first Congress that was convened under the present U.S. American Constitution and has been cited many times in the courts, it is still basic organic law of the U.S. Further, the "Act to organize the Territory of Nevada" of 1861, worded consistent with the Northwest Ordinance of 13 July 1787 stating: "... nothing in this act shall be construed to impair the rights of person or property pertaining to the Indians in said territory, so long as such rights shall remain unextingueshed by treaty between the U.S. and such Indians..." But such treaty does not exist as the Western Shoshone Nation never ceeded or transferred its homeland to the U.S. The treaty also refers to the possible creation of reservasions but nowhere does it mention the cession of surrender of Shoshone land rights or an agreement that the Western Shoshone cannot make use of theier lands anymore outside reservations or in any other part of their defined territory. The Western Shoshone lost either their territory based on "gradual encroachment"

3

RESPONSES

as such extinguishment is not permissible pursuant to the Treaty of Ruby Valley of 1863 as a treaty of "Peace and Friendship" and not of cession is still valid.

Though the Treaty of Ruby Valley allows goldmining on Western Shoshone land in general, but in a manner accordingly to the understanding of the Western Shoshone who signed the Treaty of Ruby Valley. Their general approval of goldmining did not, and could not, include modern, industrial methods such as cyanide leaching and the dewatering of large areas as it is now common practice. As the Federal Courts have confirmed it, treaties must be interpreted in the way the weaker part, this means the involved Native Americans, understood it. The crushing of their homeland by modern machinery was far beyound the knowledge and expectations of the Western Shoshones of the 19th centuty.

Furthermore, both the United States Federal District Court for the State of Nevada and the 9th Federal Circuit Court of Appeals have affirmed that the treaty "is still in full force and effect." According to Article six, section two of the Constitution of the United States, "a treaty once entered into by the United States, becomes the Supreme Law of the Land." According to common international standard, the only way to terminate the Treaty of Ruby Valley would be a common statement of Congress and the Western Shoshone Nation as the involved parties. But such statement does not exist.

Neither the authorities's argument works that Western Shoshone land rights lost their rights to their liberty and territory based on "gradual encroachment." The BLM set the date of the claimed encorachment arbitrarily to 1872. But maps show that at this time the non-Western Shoshone population was still a minority. In addition, the Treaty of Ruby Valley gives not permission to cede land titles under such assumption.

As the Western Shoshone have never given up their status as a sovereign nation and never changed the terms of the Treaty of Ruby Valley and the question of extinguishment was not necessarily in issue during the litigation before the Indian Claims Commission (ICC), the legal land title rests to the Western Shoshone Nation and its government. The dubious role of the envolved legal office and the efforts of the Te-Moak Tribe, the one band that signed the ICC agreement, to withdraw its approval provides the BLM not with a good argument for having taken over the traditional land of the Western Shoshone. The Te-Moak Band became the sole representant while the Western Shoshone National Council was not represented. UN Special Rapporteur Erica-Irene Daes characterized the ICC actions as follows: "... Processes such as that of the now defunct Indian Claims Commission in th eUnited States did not ensure that claimants had proper authority to act for the tribe concerned. Procedures did not give the tribes concerned proper notice or an opportunity to be heard..." (Preliminary working paper Indigenous Peoples and their relationship to land - UN Document E/CN.4Sub.2/1997/17, 20 June 1997).

The United States 9th Court of Appeals held that "... during the litigation before the (Indian Claims Commission), the extinguishment question was not necessarily in issue, it was not acually litigated, and is has not been decided." (United States v. Dann, 572 F.2d 222, 226 - 227; 9th Cir., 1978; revised on other grounds, 470 U.S. 39; 1985).

The final award of the ICC of $ 26 million of 12 December 1979 placed the Government in a dual role of beeing both a judgment debtor and a trustee for the Western Shoshone; a role which is contradictionary to the said treaty. Finally to this point, the Western Shoshone never accepted this payment.

Besides questions of sovereigny, many Western Shoshone expressed special concerns about the damage and/or disturbance of burial places, possible damage on springs, the sage grouse strutting, the diminishing of animal and plant species over the past decades after the intrusion of more and more mining companies into their land the inter-relatedness of impacts to water, land, and air.
Further, one should remember that many Western Shoshone, especially older ones, became tired of answering many questions of scientists concerning private questions such as the sacredness of an area, plant or animal. While most people in the western world are disposed to speak openly and discursively about religious topics, others, as the Western Shoshone, are not and regard it as a source of identity as a nation.
Finally, as various DEIS and other examinations have been ongoing in recent years, it has often been difficult for Western Shoshone (elders) to distinct one examination from another one. For Western Shoshone officials had it might been difficult to answer detailed questionaires as they usually are not full-time employed by their bands. As they have to take care of their jobs, their is an obvious lack of time for them. Beyond, Western Shoshone had to learn the sad lesson that identifying specific places of plants or burial places and sacred sites do not protect them as there has been cases of vandalism destroying them. Many Western Shoshone are for this reason not prepared to identify specific locations but only to state that this is an area of specific importance to them.

Therefore, one should have in mind that the area of the Trenton Canyon Project contains maybe more sacred and cultural places, which are significant for the Western Shoshone Nation, as it is known for the time being. Finally, representens of one culture should not determine which place has significance for the culture and religion of another one.

For BLM Winnemucca's general information, we enclose the Declaration "Mining and Indigenous Peoples Consultation", Londen, England, 6 - 16 May 1996, that illustrates the general attitude of indigenous peoples concerning mining on their ancestral land very good.

Conclusion:

1. IWGIA Denmark urges you not to proceed the Trenton Canyon Project as long as the question of Western Shoshone sovereignty of the land is not settled and the Western Shoshone government has not outlined its position concerning the use of modern mining technologies.

2. IWGIA Denmark urges you to work very closely together with the Western Shoshone National Council and the Western Shoshone Defense Project in order to find a fair and accepteble solution for the native inhabitans of the Newe Sogobia.

C: Environmental concerns

Water: As stated in the DEIS, the surface water quality in th eproject vicinity is generally good. But it seems that the risk for pollution of the various groundwater systems due to the fractured bedrock is quite high. Large-scale mining activities can easily cause vibrations and change the subterranean water flow. An example of an unexpected result of exploitation work is the event of August 28, 1997 when a rigg of Oro Nevada Mining Company hit an underground water reservoir. It caused not only a 60 feet high spray into the air but also reduced flow of hot springs quite far away from the actual point. Western Shoshone expressed a similar concern during the examination phase of the Trenton Canyon Mine project.

Experience from other mines shows that water contamination pit lakes formed by mine pits present the potentioal for long-term water contamination, especially the groundwater. Over time, naturally occurring heavy metals and other constituents can accumulate at dangerously elevated levels in the pits creating hazards for wildlife and contaminating groundwater. It is estimated seriously that a monitoring process of 250 years after mining ends is necessary. Is Newmont willing to pay for all costs during such a long period? Who can guarantee at all that the necessary control measures will done during the life time of various generations?

We are not going to carry coals to Newcastle but would like to underline that water is the source of life. The limited resources in an arid area such as the Great Bassin, which is located in the rain shadow of the High Sierras, need even more protection and cautious use than anywhere else.

Hazardous Materials: Despite the DEIS' assumption that small amounts of various materials for daily consumption do not expose the environment for danger, mistakes in handling, leaky reservoirs ans so on an known from other mines and practically predictable.

Soil: IWGIA Denmark finds it worth to become worry about the remark that "This volume would likely fall short of the volume required for adequate reclamation, and would require supplemental material." (DEIS, p S-6). Who has to arrange and pay for this supplemantal material? Where shall it come from in order to avoid an "export" of the problem by taking soil from another place?

Visual: The DEIS already states that the peak, north-facing slopes, of the Bgttle Mountain were originally rated by BLM for their scenic quality as level B. Due to ongoing mining and other activities the scenic quality is rated as level C.

This means that the ongoing mining activities have already badly changed the landscapes and created new facts. Nevertheless, these circumstances give by no means the right to make it even worse by operating a new mine.

Letter #4 (Cont.)
COMMENTS

RESPONSES

Animals and plants: The DEIS states that no threatened, endangered, or candidate plant species have the potential to occur within the project area. Regardless the BLM can furnish evidence for this thesis or not, one should have in mind that the living space for many animals and plants has become more and more limited since the Treaty of Ruby Valley was signed. Many hunting and gathering areas have already been consumed by mines. Another gold mine including its necessary access roads, disposal areas and other technical equipment plus the inevitable noise and smell of those together would limit the living space of various raptors, mule deer, foxes, coyote, bobcat, you name it, even more. Due to the increased level of human activity, table 3-19 regarding Special Status Species might become even longer.

Conclusions:

Experience from various other existing gold mines shows that, despite of good intentions and plans, accidents can always happen while unforseen technical and geological problems can always occur. Despite many considerations in the DEIS, IWGIA Denmark regards the potential environmental risks higher than acceptable.

In its entirety, the Trenton Canyon Project contains various risks to pollute the environment, to disturbe the flora and fauna of the project area and its surroundings and to cause irreparable damage.

Comment: As a consequence of the above mentioned concerns, IWGIA Denmark urges the Bureau of Land Management Winnemucca not to allow Newmont Gold Company or another mining company to operate a (gold) mine in the project area.

Furthermore, it is of outmoust importance to respect the unceeded treaty and traditional rights of the Western Shoshone Nation and to protect the environment against an permanent operation such as the Trenton Canyon Project.

It is hard to explain to coming and unborn generations why the human civilization at the end of the 20th century regarded the possibility of gold exploitation higher than the undisturbed life and survival of animals and plants. On must remember that they are also creatures of God and part of our life.

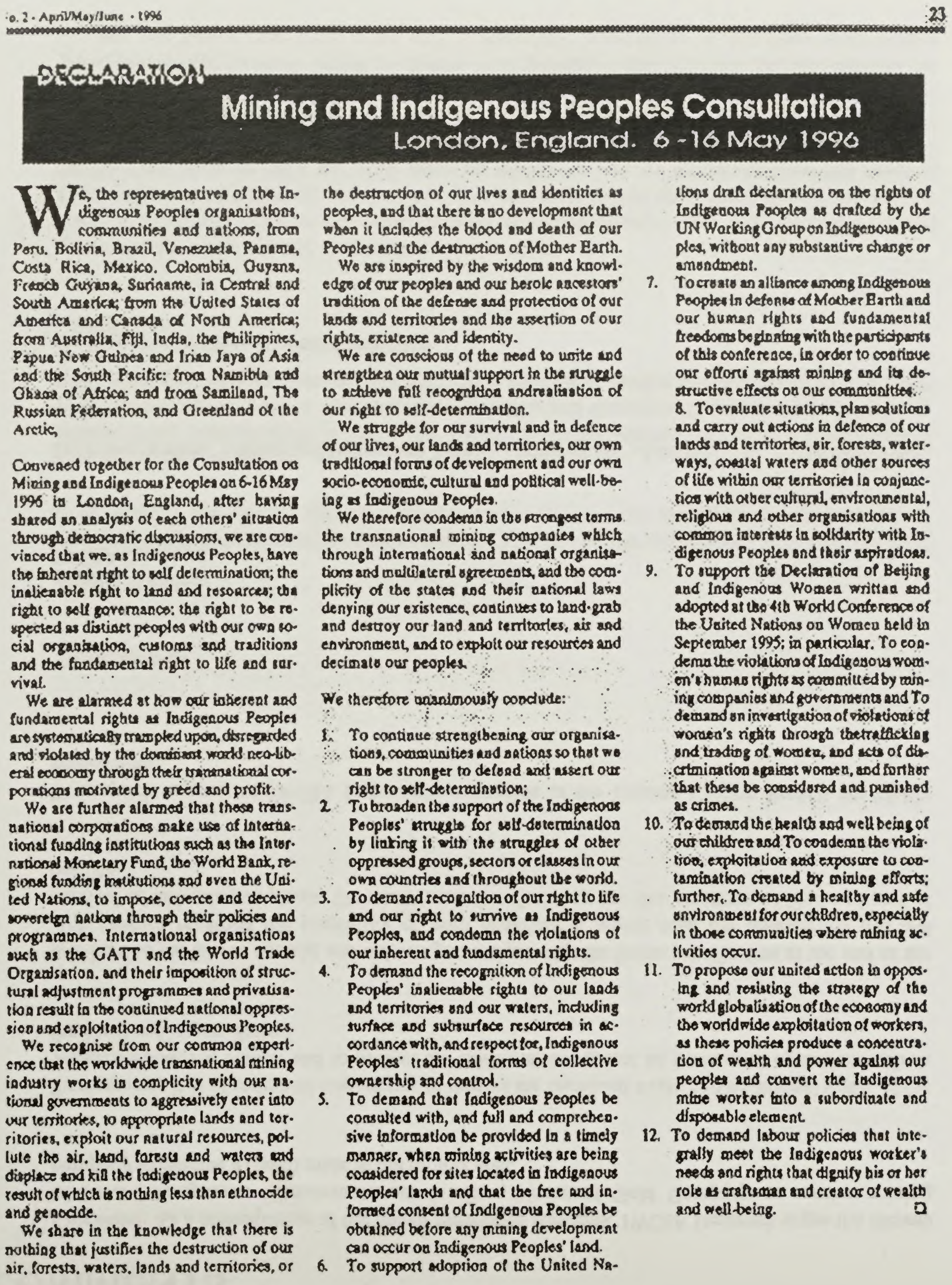
Your quick respons to IWGIA Denmark's comments to the Trenton Canyon Project are highly appreciated.

Yours sincerely

Andreas Knudsen
IWGIA Denmark

Encl: Declaration "Mining and Indigenous Peoples Consultation" - London, U.K., 6 - 16 May 1996

cc: Western Shoshone Defense Committee



DECLARATION

Mining and Indigenous Peoples Consultation

London, England. 6 -16 May 1996

We, the representatives of the Indigenous Peoples organisations, communities and nations, from Peru, Bolivia, Brazil, Venezuela, Panama, Costa Rica, Mexico, Colombia, Guyana, French Guyana, Suriname, in Central and South America; from the United States of America and Canada of North America; from Australia, Fiji, India, the Philippines, Papua New Guinea and Irian Jaya of Asia and the South Pacific: from Namibia and Ghana of Africa; and from Samiland, The Russian Federation, and Greenland of the Arctic,

Convened together for the Consultation on Mining and Indigenous Peoples on 6-16 May 1996 in London, England, after having shared an analysis of each others' situation through democratic discussions, we are convinced that we, as Indigenous Peoples, have the inherent right to self determination; the inalienable right to land and resources; the right to self governance; the right to be respected as distinct peoples with our own social organization, customs and traditions and the fundamental right to life and survival.

We are alarmed at how our inherent and fundamental rights as Indigenous Peoples are systematically trampled upon, disregarded and violated by the dominant world neo-liberal economy through their transnational corporations motivated by greed and profit.

We are further alarmed that these transnational corporations make use of international funding institutions such as the International Monetary Fund, the World Bank, regional funding institutions and even the United Nations, to impose, coerce and deceive sovereign nations through their policies and programmes. International organisations such as the GATT and the World Trade Organisation, and their imposition of structural adjustment programmes and privatisation result in the continued national oppression and exploitation of Indigenous Peoples.

We recognise from our common experience that the worldwide transnational mining industry works in complicity with our national governments to aggressively enter into our territories, to appropriate lands and territories, exploit our natural resources, pollute the air, land, forests and waters and displace and kill the Indigenous Peoples, the result of which is nothing less than ethnocide and genocide.

We share in the knowledge that there is nothing that justifies the destruction of our air, forests, waters, lands and territories, or the destruction of our lives and identities as peoples, and that there is no development that when it includes the blood and death of our Peoples and the destruction of Mother Earth.

We are inspired by the wisdom and knowledge of our peoples and our heroic ancestors' tradition of the defense and protection of our lands and territories and the assertion of our rights, existence and identity.

We are conscious of the need to unite and strengthen our mutual support in the struggle to achieve full recognition andrealisation of our right to self-determination.

We struggle for our survival and in defence of our lives, our lands and territories, our own traditional forms of development and our own socio-economic, cultural and political well-being as Indigenous Peoples.

We therefore condemn in the strongest terms the transnational mining companies which through international and national organisations and multilateral agreements, and the complicity of the states and their national laws denying our existence, continues to land-grab and destroy our land and territories, air and environment, and to exploit our resources and decimate our peoples.

We therefore unanimously conclude:

1. To continue strengthening our organisations, communities and nations so that we can be stronger to defend and assert our right to self-determination;
2. To broaden the support of the Indigenous Peoples' struggle for self-determination by linking it with the struggles of other oppressed groups, sectors or classes in our own countries and throughout the world.
3. To demand recognition of our right to life and our right to survive as Indigenous Peoples, and condemn the violations of our inherent and fundamental rights.
4. To demand the recognition of Indigenous Peoples' inalienable rights to our lands and territories and our waters, including surface and subsurface resources in accordance with, and respect for, Indigenous Peoples' traditional forms of collective ownership and control.
5. To demand that Indigenous Peoples be consulted with, and full and comprehensive information be provided in a timely manner, when mining activities are being considered for sites located in Indigenous Peoples' lands and that the free and informed consent of Indigenous Peoples be obtained before any mining development can occur on Indigenous Peoples' land.
6. To support adoption of the United Nations draft declaration on the rights of Indigenous Peoples as drafted by the UN Working Group on Indigenous Peoples, without any substantive change or amendment.
7. To create an alliance among Indigenous Peoples in defense of Mother Earth and our human rights and fundamental freedoms beginning with the participants of this conference, in order to continue our efforts against mining and its destructive effects on our communities.
8. To evaluate situations, plan solutions and carry out actions in defence of our lands and territories, air, forests, waterways, coastal waters and other sources of life within our territories in conjunction with other cultural, environmental, religious and other organisations with common interests in solidarity with Indigenous Peoples and their aspirations.
9. To support the Declaration of Beijing and Indigenous Women written and adopted at the 4th World Conference of the United Nations on Women held in September 1995; in particular, To condemn the violations of Indigenous women's human rights as committed by mining companies and governments and To demand an investigation of violations of women's rights through thetrafficking and trading of women, and acts of discrimination against women, and further that these be considered and punished as crimes.
10. To demand the health and well being of our children and To condemn the violation, exploitation and exposure to contamination created by mining efforts; further, To demand a healthy and safe environment for our children, especially in those communities where mining activities occur.
11. To propose our united action in opposing and resisting the strategy of the world globalisation of the economy and the worldwide exploitation of workers, as these policies produce a concentration of wealth and power against our peoples and convert the Indigenous mine worker into a subordinate and disposable element.
12. To demand labour policies that integrally meet the Indigenous worker's needs and rights that dignify his or her role as craftsman and creator of wealth and well-being. □

Letter #5
COMMENTS

BOB MILLER
Governor

STATE OF NEVADA

JOHN P. COMEAUX
Director

DEPARTMENT OF ADMINISTRATION
Capitol Complex
Carson City, Nevada 89710
Fax (702) 687-3983
(702) 687-4065

RECEIVED
APR 10 1998
DISTRICT OFFICE
WINNEMUCCA, NEVADA

April 8, 1998

Rodney Herrick
Project Manager, Bureau of Land Management
5100 East Winnemucca
Winnemucca, Nevada 89445

Re: 1793/3809 NV-020 SAI NV #E1998-092
Project: Draft Environmental Impact Statement for Newmont Gold's Trenton Canyon Project

Dear Mr. Herrick

Enclosed are the comments from the Nevada Divisions of Wildlife, Water Resources, Minerals, and Conservation Districts, plus our Natural Heritage Program and Department of Transportation on the DEIS for the Trenton Canyon Project.

A We also enclose the October 1996 Nevada Natural Heritage Program, Department of Transportation, and Wildlife comments on the Notice of Intent for this project, 1793 (NV-026.5), SAI #E1997-030.

We are deeply concerned that several of the concerns raised in 1996 were not fully addressed in the draft EIS, and would appreciate responses to those concerns before release of the Final Environmental Impact Statement.

These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision. If you have questions, please contact me at 687-6366.

Sincerely,
Maud Naroll

Maud Naroll
Nevada State Clearinghouse

xc with attachments:
- Tim Crowley, Governor's Office
- Larry Barngrover, Wildlife-Elko
- Glenn Clemmer, Natural Heritage Program
- Thomas Fronapfel, PE, Department of Transportation

Enclosures

RESPONSES

A Please refer to the following responses to scoping letters 12, 13, and 14, pages 4-23 through 4-26.

Letter #6

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(702) 688-1500 • Fax (702) 688-1595

BOB MILLER
Governor

PETER G. MORROS
Director
Department of Conservation
and Natural Resources

WILLIAM A. MOLINI
Administrator

RECEIVED
MAR 2 3 1998
DEPT OF ADMINISTRATION
DIRECTOR'S OFFICE

March 16, 1998

Maud Naroll, Chief Planner
Nevada State Clearinghouse
Department of Administration
Budget and Planning Division
Blasdel Building, Room 200
209 East Musser Street
Carson City, NV 89710

RE: SAI# 1998-092, Draft Environmental Statement, Trenton Canyon Project, Newmont Gold Company, Lander/Humboldt Counties, Nevada - BLM

Dear Ms. Naroll:

	COMMENTS	RESPONSES
A	We appreciate the opportunity to review and provide comments on the subject document. In Section 4.10.1, Direct and Indirect Impacts, in the second paragraph, the document indicates possible effects include the decrease in forage and cover, reduction in prey base due to decreased vegetation, creation of barriers, increase in human presence and risks from hazardous materials. There is no discussion about the loss of less mobile species from the development of the proposed action. The only loss mentioned is from increased road traffic.	This comment is noted, and Section 4.10.1 is modified in Chapter 3, Modifications to the Draft EIS, page 3-56.
B	In 4.10.1.2, Proposed Action, under the subheading Impacts to Mammals, the text references the above mentioned paragraph for discussing the impacts to small and medium sized mammals. This does not account for the loss of small mammals that are unable to relocate away from the disturbance of the proposed action.	See response to comment A.
C	In the same section under the subheading Impacts to Reptiles, the document indicated there will be no impact to reptiles and amphibians. This may be accurate for amphibians due to no disturbances to the riparian habitat but over 1600 acres of sagebrush habitat will be disturbed. Numerous reptiles inhabit this type of habitat as noted in Chapter 3. The less mobile of those individuals that are unable to relocate would be lost as a result of the proposed action.	These comments are noted, and further discussion of impacts to reptiles inhabiting sage brush habitat is presented in Chapter 3, Modifications to the Draft EIS, page 3-57 (see response to comment A).
D	In Section 4.10.4, Partial Backfill Alternatives, in the last sentence the document discusses the amount of acres of habitat that will be disturbed will be reduced by 30-50 acres assuming the pits would not provide for enhanced wildlife following reclamation. What does this paragraph mean?	The paragraph in Section 4.10.1.4 (page 4-53 of the DEIS) should be rephrased to state: "The backfill alternatives as described in Section 2.6.2.3 could, after reclamation, reduce the total amount of wildlife habitat disturbed by 30-50 acres when compared to the Proposed Action. This assumes that partial backfill of overburden material to the pits would reduce the footprint of the overburden disposal areas."
E	In Section 4.18.8, Wetlands and Riparian Habitat, the document indicates the wildlife diversity and abundance for migrating species could improve if the wetlands dried up and became a seasonal mudflat. We do not agree with this statement. If this is true we would be interested in seeing the documentation or references for examples of this in Nevada.	This sentence has been deleted from the DEIS. Please refer to Chapter 3, Modifications to the Draft EIS, page 3-72.

Letter #6 (Cont.)
COMMENTS

Maud Naroll
March 16, 1998
Page 2

F In Section 4.18.9, Wildlife, Fisheries and Special Status Species, on Page 4-95, the second paragraph does not seem in the correct place in the document.

G Further down on the same page, the document discusses the cumulative analyses on displaced wildlife AUMs. Nowhere else in this document are AUMs discussed. We would suggest the analyses be discussed in relation to acres of habitat disturbed.

H The Expansion of T-6 and the elimination of T-4 and T-5 would be better for wildlife. Water quality, habitat type and quality and reclamation potential will all be better if this alternative is adopted.

The Sequential Backfill option would be better for wildlife as well. This would reduce the total disturbance and increase the potential to revegetate the backfilled pits. This would decrease the long term loss of wildlife habitat in the Battle Mountains.

The Nevada Division of Wildlife appreciates the opportunity to review the preliminary EIS for the Trenton Canyon Project. Please feel free to contact me for additional information or comments that you may have on our input.

Sincerely,

Rory E. Lamp

Rory E. Lamp
Biologist III
1375 Mountain City Highway
Elko, NV 89801
(702) 738-5332

RL
cc: Habitat Division
Larry Teske, Pete Bradley, John Gephardt
File

RESPONSES

F Please refer to revised Section 4.18.9 in Chapter 3 of this FEIS, beginning on page 3-73.

G Please refer to response to Comment F.

H These comments are noted and will be considered in the final decision.

Letter #7
COMMENTS

BOB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

R. MICHAEL TURNIPSEED, P.E.
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES
123 W. Nye Lane, Suite 246
Carson City, Nevada 89706-0818
(702) 687-4380 • Fax (702) 687-6972

February 19, 1998

CLEARINGHOUSE SAI# E1998-092

A Newmont Gold Company currently possesses adequate rights to transport water from the Lone Tree project to the Trenton Canyon project in the amount of at least 1100 c.f.s. Care should be taken that the permitted diversion is not exceeded without prior authorization. Care should also be taken to ensure that water is not used outside of the permitted place of use.

B The ponds associated with the project, although not adequately described with respect to capacity and design, should not be of a size to require prior construction authorization (dam safety permit) pursuant to Nevada Revised Statutes (NRS) chapter 535. If the location or size of the ponds are altered or downstream improvements are made, the permitting issue must be revisited. If it becomes necessary to divert any water courses associated with a water right acquired pursuant to chapter 533 of the NRS, the State Engineer must be given prior notice.

C Impacts to water rights holders within the study area were not mentioned.

No mention was made of the existence of or impacts to underground water rights within the study area.

If there are no anticipated adverse impacts to water rights holders then that should be so stated in the appropriate areas of the EIS.

Michael J. Anderson, P.E.
Staff Engineer III

RESPONSES

A This comment is noted.

B It is not anticipated that the solution ponds would require a dam safety permit; if a permit is required, Newmont will comply with NRS Chapter 535. In the event that it becomes necessary to divert a water course associated with a water right, Newmont will comply with NRS Chapter 533 and provide appropriate notice to the State Engineer.

C Please refer to Chapter 3 of the FEIS, pages 3-21, 3-22, 3-47, 3-49, and 3-50, for a further discussion of water rights in the project area.

Letter #8
COMMENTS

STATE OF NEVADA
DEPARTMENT OF BUSINESS AND INDUSTRY
DIVISION OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89710
http://www.state.nv.us/busi...industry/mineral/mineral.htm
(702) 687-5050 • Fax (702) 687-3957

BOB MILLER
Governor

Las Vegas Branch
2501 E. Sahara Avenue
Suite 206
Las Vegas, Nevada 89104
(702) 486-4343
Fax (702) 486-4345

CLAUDIA K. CORMIER
Director

RUSSELL A. FIELDS
Administrator

March 24, 1998

RECEIVED
MAR 25 1998
DEPT OF ADMINISTRATION
DIRECTOR'S OFFICE

Maud Naroll, Chief Planner
Nevada State Clearinghouse
Department of Administration, Planning Division
Blasdel Bldg., Room 200
Carson City, NV 89710

Re: Nevada SAI# E1998-092 -- Draft Environmental Impact Statement (DEIS) for Newmont Gold Company's Trenton Canyon Project -- Due Date: April 7,1998.

The Nevada Division of Minerals has reviewed the DEIS for Newmont Gold Company's Trenton Canyon Project.

Division comments and observations are as follows:

A
- We urge very careful analysis and flexibility on the part of BLM if the Agency Preferred Alternative of sequential pit backfill is selected. Opportunities for future mining in areas where there is, by current market and technological standards, marginal or low grade ore, should not be sacrificed to gain a few extra acres of reclaimed land.

B
- We concur with the pit berm and warning sign scenario, as stated, in Section 2.4.7.3. This is a recognized and approved securing method for open pit mines and fulfills the requirements of NAC 513.
- The Trenton Canyon Project has our full support.

We look forward to the opportunity to review the Final EIS when it becomes available. Please contact the Division at any time for additional information or assistance.

Sincerely,

Bill Durbin

Bill Durbin
Geologist

bd\sai98092

Nevada Department of Business & Industry

Financial Services Team   Licensing & Regulatory Services Team   Natural Resources Services Team   Consumer & Labor Services Team

RESPONSES

A This comment is noted and will be considered in the final decision.

B This comment is noted.

Letter #9
COMMENTS

NEVADA STATE CLEARINGHOUSE
Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
(702) 687-4065
fax (702) 687-3983

DIVISION OF
FEB 1 2 1998
CONSERVATION DISTRICTS

DATE: February 9, 1998

Governor's Office
Nuclear Projects Office
Business & Industry
Agriculture
Energy
Minerals
Economic Development
Tourism
Fire Marshal
Human Resources
Aging Services
Health Division
Indian Commission
Colorado River Commission

Legislative Counsel Bureau
Information Technology
Emp. Training & Rehab Research Div.
PUC
Transportation
UNR Bureau of Mines
UNR Library
UNLV Library
Historic Preservation
Emergency Management
Washington Office

Conservation-Natural Resources
Director's Office
State Lands
Environmental Protection
Forestry
Wildlife
Region 1
Region 2
Region 3
Conservation Districts ✓
State Parks
Water Resources
Water Planning
Natural Heritage
Wild Horse Commission

Nevada SAI # E1998-092 ✓ Project: Draft EIS for Newmont Gold's Trenton Canyon Project

__ Yes __ No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:

Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and program: the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with whic you are familiar.

Please submit your comments no later than April 7, 1998. Use the space below for short comments. If significant comments are provided, please us agency letterhead and include the Nevada SAI number and comment due date for our reference. Julie Butler, ~~Clearinghouse Coordinator~~, (687-6367) began new position November 20. Please contact Maud Naroll, Chief Planner, (687-6366), until the Coordinator position is filled.

RECEIVED
MAR - , 1998
DEPT OF ADMINISTRATION
DIRECTOR'S OFFICE

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___No comment on this project
___Proposal supported as written
___Additional information below

___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

A TO LESSON THE IMPACT OF HABITAT LOSS AT THE TRENTON CANYON PROJECT OFF SITE MITIGATION SHOULD BE CONSIDERED SO THE END RESULT WOULD BE NO NET LOSS OF HABITAT.

THIS SHOULD INCLUDE OFF SITE MITIGATION FOR STREAMS, WETLANDS, WILDLIFE AND GRAZING IMPROVEMENTS.

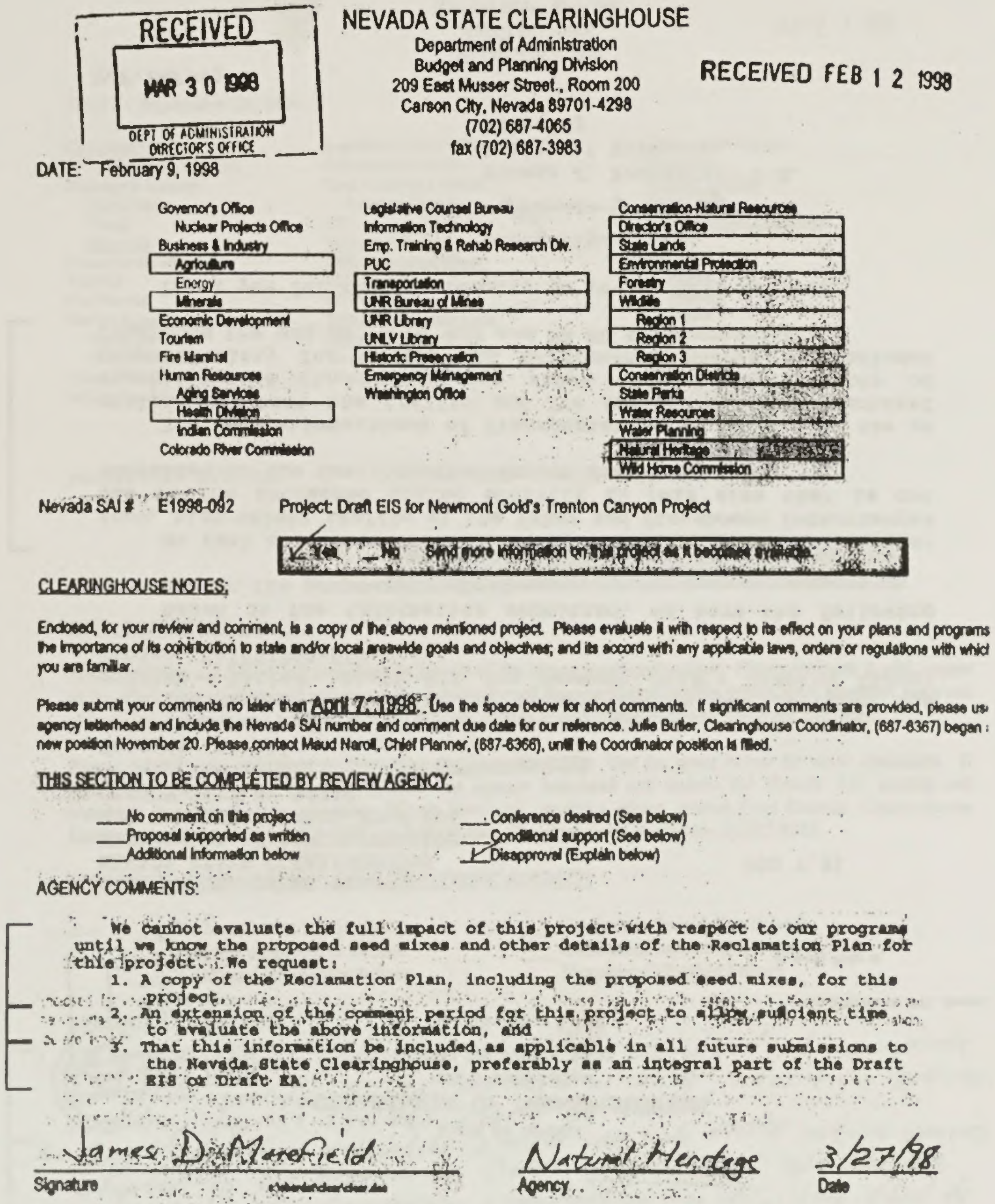
C/K Freeman
Signature
s:\shardat\clear\clear.doc

Nv Div CDs
Agency

3/4/98
Date

RESPONSES

A This comment is noted.



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MAR 30 1998
DEPT OF ADMINISTRATION
DIRECTOR'S OFFICE

NEVADA STATE CLEARINGHOUSE
Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
(702) 687-4065
fax (702) 687-3983

RECEIVED FEB 12 1998

DATE: February 9, 1998

Governor's Office
Nuclear Projects Office
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Minerals
Economic Development
Tourism
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Human Resources
Aging Services
Health Division
Indian Commission
Colorado River Commission

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PUC
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UNR Bureau of Mines
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Washington Office

Conservation-Natural Resources
Director's Office
State Lands
Environmental Protection
Forestry
Wildlife
Region 1
Region 2
Region 3
Conservation Districts
State Parks
Water Resources
Water Planning
Natural Heritage
Wild Horse Commission

Nevada SAI # E1998-092 Project: Draft EIS for Newmont Gold's Trenton Canyon Project

✓ Yes ___ No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:

Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with whic you are familiar.

Please submit your comments no later than April 7, 1998. Use the space below for short comments. If significant comments are provided, please us agency letterhead and include the Nevada SAI number and comment due date for our reference. Julie Butler, Clearinghouse Coordinator, (687-6367) began new position November 20. Please contact Maud Naroll, Chief Planner, (687-6366), until the Coordinator position is filled.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___ No comment on this project
___ Proposal supported as written
___ Additional information below
___ Conference desired (See below)
___ Conditional support (See below)
✓ Disapproval (Explain below)

AGENCY COMMENTS:

A We cannot evaluate the full impact of this project with respect to our programs until we know the proposed seed mixes and other details of the Reclamation Plan for this project. We request:

1. A copy of the Reclamation Plan, including the proposed seed mixes, for this project,

B 2. An extension of the comment period for this project to allow sufficient time to evaluate the above information, and

C 3. That this information be included as applicable in all future submissions to the Nevada State Clearinghouse, preferably as an integral part of the Draft EIS or Draft EA.

James D. Morefield
Signature

Natural Heritage
Agency

3/27/98
Date

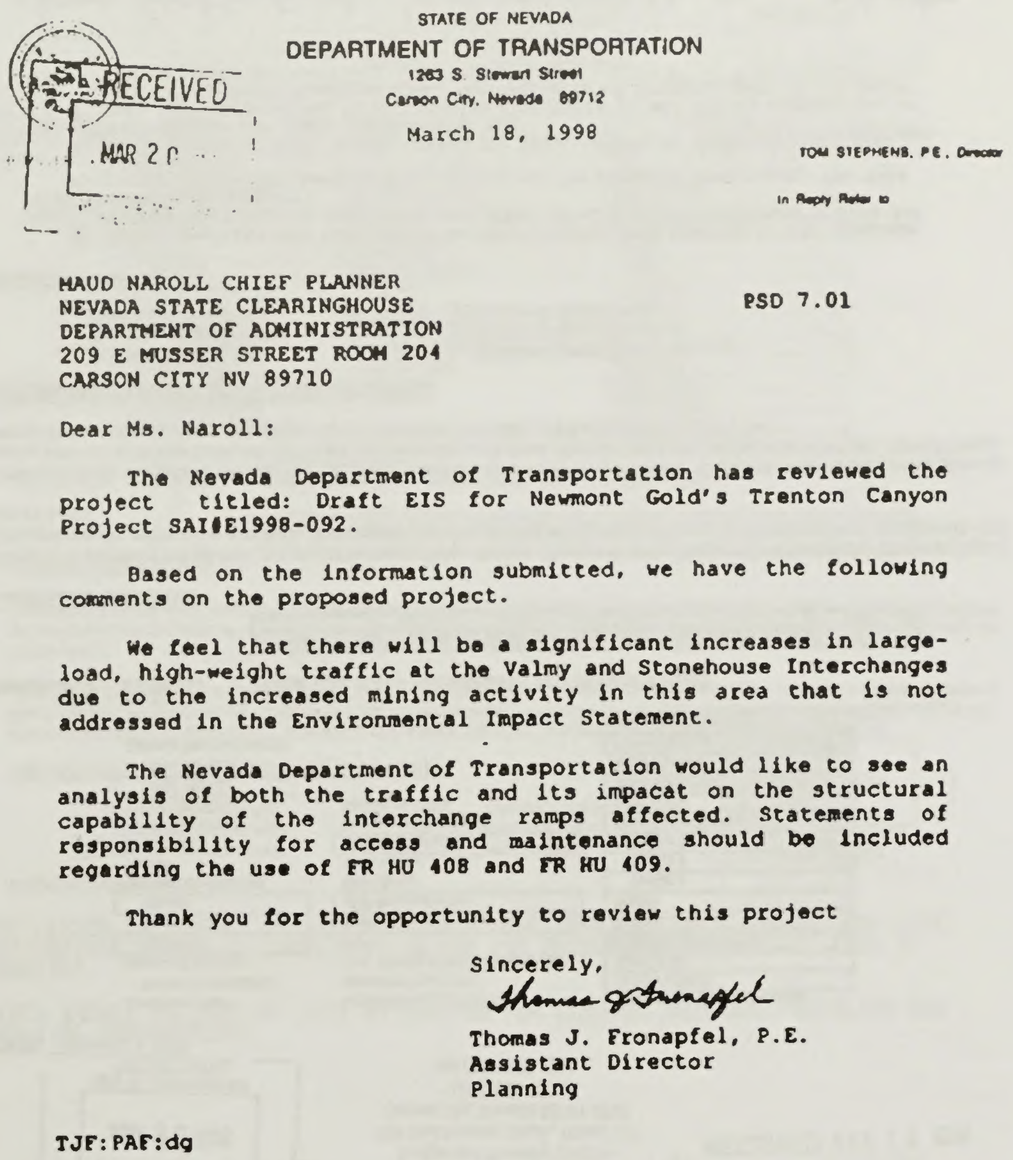
RESPONSES

A Please refer to the proposed seed mix tables included as Appendix C. An expanded discussion of the reclamation plan is included in Chapter 3, Modifications to the Draft EIS, page 3-17.

B The comment period for the DEIS was sufficient and will not be extended. There is a 30-day comment period for the FEIS.

C This comment has been noted.

Letter #11
COMMENTS



RECEIVED
MAR 2 0

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
1263 S. Stewart Street
Carson City, Nevada 89712

March 18, 1998

TOM STEPHENS, P.E., Director

In Reply Refer to

PSD 7.01

MAUD NAROLL CHIEF PLANNER
NEVADA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
209 E MUSSER STREET ROOM 204
CARSON CITY NV 89710

Dear Ms. Naroll:

The Nevada Department of Transportation has reviewed the project titled: Draft EIS for Newmont Gold's Trenton Canyon Project SAI#E1998-092.

Based on the information submitted, we have the following comments on the proposed project.

A

We feel that there will be a significant increases in large-load, high-weight traffic at the Valmy and Stonehouse Interchanges due to the increased mining activity in this area that is not addressed in the Environmental Impact Statement.

The Nevada Department of Transportation would like to see an analysis of both the traffic and its impacat on the structural capability of the interchange ramps affected. Statements of responsibility for access and maintenance should be included regarding the use of FR HU 408 and FR HU 409.

Thank you for the opportunity to review this project

Sincerely,

Thomas J. Fronapfel

Thomas J. Fronapfel, P.E.
Assistant Director
Planning

TJF:PAF:dg

RESPONSES

A Please refer to response to comment letter #2 (Department of Transportation), page 4-4.

Letter #12
COMMENTS

NEVADA STATE CLEARING
Department of Administration
Budget and Planning Division
Blasdel Bldg., Rm. 200
(702) 687-4065
fax (702) 687-3983

SEP 2 3 1996

DATE: September 20, 1996

Governor's Office
  Nuclear Projects Office
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Economic Development
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  Health Division
Colorado River Commission
Indian Commission

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  Research Division
PSC
Transportation
UNR Bureau of Mines
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Wild Horse Commission
Historic Preservation
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Washington Office

Conservation-Natural Resources
Director's Office
State Lands
Environmental Protection
Forestry
Wildlife
  Region 1
  Region 2
  Region 3
Conservation Districts
State Parks
Water Resources
Water Planning
[redacted]

Nevada SAI # E1997-030 **Project: NOI – Trenton Canyon Mine Project**

[redacted]

CLEARINGHOUSE NOTES:

Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than [redacted] Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. If you have any questions, please contact Terri Rodefer, Clearinghouse Environmental Advocate, at 687-6382, or Julie Butler, Clearinghouse Coordinator, at 687-6367.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___No comment on this project
___Proposal supported as written
_✓_Additional information below

___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

A 1. The area to be disturbed should be surveyed at appropriate times of year for State-protected or other sensitive species, and any impacts thereto should be avoided.

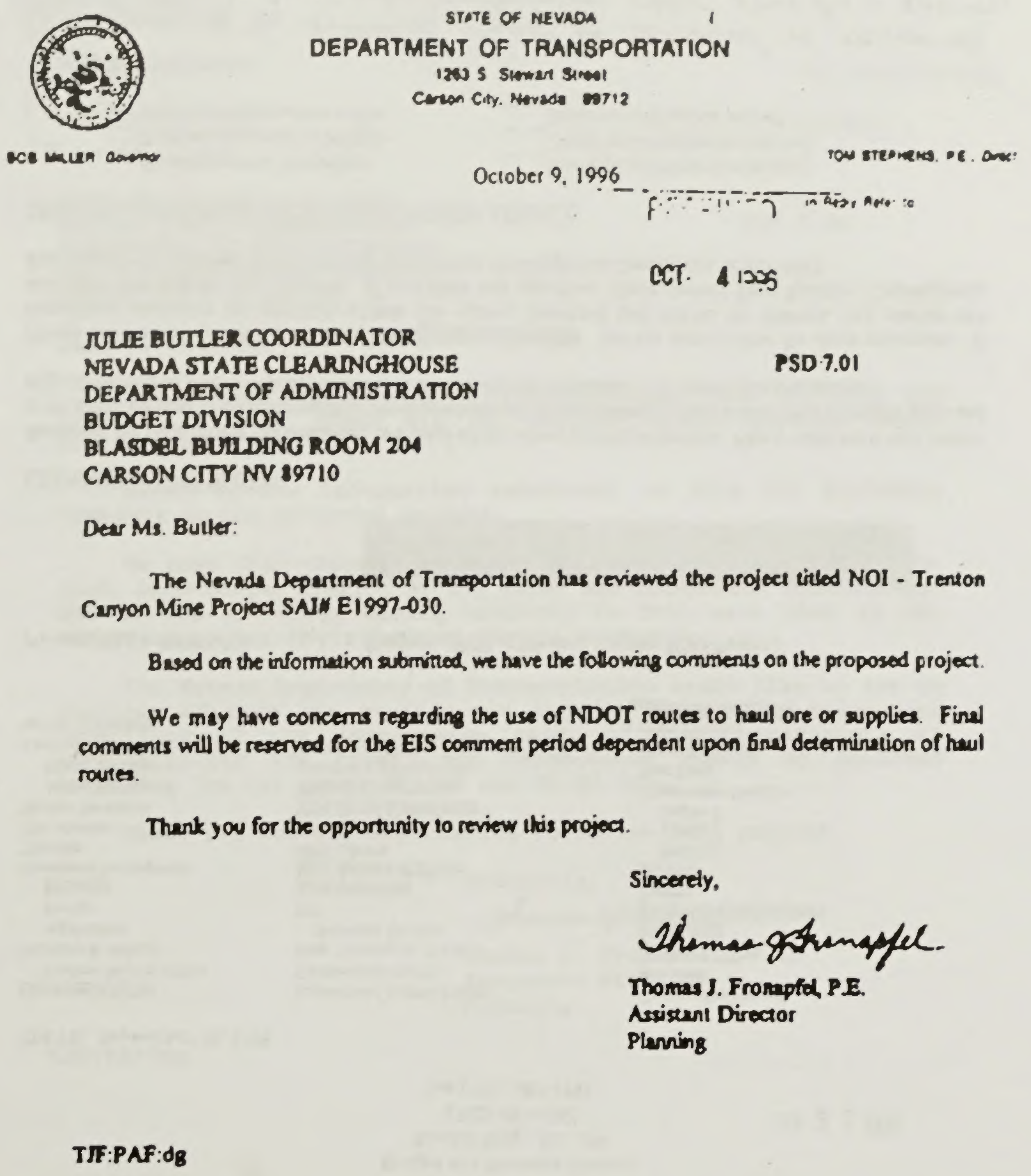
B 2. Any revegetation activities should use only 100% native species adapted to the local area. Other non-persistent species are acceptable for temporary stabilization, in densities that do not inhibit establishment of natives.

RESPONSES

A The concerns expressed in this scoping comment were incorporated into the baseline studies for the Trenton Canyon Project.

B Introduced species would be used primarily for the growth medium stockpiles, where the objective is to establish effective, but temporary cover. In other reclamation areas the introduced species would not be of a density that would inhibit the establishment and growth of native species. A proposed species mix was included in Table 2-5 of the DEIS, and is also included as Appendix C of this FEIS.

Letter #13
COMMENTS



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
1263 S. Stewart Street
Carson City, Nevada 89712

BOB MILLER Governor

TOM STEPHENS, P.E., Director

October 9, 1996

In Reply Refer to

OCT. 4 1996

JULIE BUTLER COORDINATOR
NEVADA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
BUDGET DIVISION
BLASDEL BUILDING ROOM 204
CARSON CITY NV 89710

PSD 7.01

Dear Ms. Butler:

The Nevada Department of Transportation has reviewed the project titled NOI - Trenton Canyon Mine Project SAI# E1997-030.

Based on the information submitted, we have the following comments on the proposed project.

A We may have concerns regarding the use of NDOT routes to haul ore or supplies. Final comments will be reserved for the EIS comment period dependent upon final determination of haul routes.

Thank you for the opportunity to review this project.

Sincerely,

Thomas J. Fronapfel

Thomas J. Fronapfel, P.E.
Assistant Director
Planning

TJF:PAF:dg

RESPONSES

A Please refer to response to comment letter #2 (Department of Transportation), page 4-4.

Letter #14
COMMENTS

BOB MILLER
Governor

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(702) 688-1500 • Fax (702) 688-1595

PETER G. MORROS
Director
Department of Conservation and Natural Resources

WILLIAM A. MOLINI
Administrator

October 11, 1996

RECEIVED
OCT 21 1996

Rod Herrick, Project Manager
Winnemucca District
Bureau of Land Management
5100 E. Winnemucca Blvd
Winnemucca, NV 89445

RE: SAI # E1997-030, Scoping Trenton Canyon Project, Sante Fe Pacific Mining, Inc., Lander/Humboldt Counties, Nevada - BLM

Dear Mr. Herrick:

We appreciate the opportunity to review and provide comments on the subject document.

The wildlife resources that our agency feels need to be considered include mule deer summer habitat, upland game habitat, wildlife water sources and fisheries resources.

A The entire project area is considered mule deer summer habitat. Our agency is concerned with the cumulative effects of all of the mining projects in the Battle Mountains on mule deer habitat. We would like to see some analysis of the total disturbance to mule deer habitat in the Battle Mountain range that has occurred as a result of mining activity.

B Access to the project is through Trenton Canyon. There is a small seep at the mouth of Trenton Canyon that is essential to the local upland game and nongame wildlife. This area is a very popular site for chukar hunters. Our agency would like to see some commitment by the proponent that this water source will not be compromised and that access be maintained during the proposed mining activity.

C The Cottonwood Creek drainage supports valley quail populations. It will be important to preserve the riparian habitat along the creek as much as possible to provide suitable habitat for these quail.

D Cottonwood Creek is known to support a small trout population that is self maintaining. We would support any measures to protect this population of trout. We note that the plan calls for sediment control measures to be implemented to protect this drainage. It will be important to ensure that these controls are maintained.

RESPONSES

A Cumulative impacts to mule deer habitat in the Battle Mountain Range are discussed in Chapter 4, Section 4.18.9, Cumulative Effects on page 4-95 of the DEIS. This section has been revised in Chapter 3 of this FEIS, page 3-73.

B Access to the project is not through Trenton Canyon. The seep is located outside the project area and would not be affected by mining activity. Public access would be maintained.

C Please refer to pages 3-73 and 4-51 of the DEIS for discussion of valley quail. The riparian habitat along Cottonwood Creek and Trout Creek would not be directly impacted by construction and operation of the proposed project except for minimal road crossings.

D This comment was noted during preparation of the DEIS and Best Management Practices and erosion control measures as part of the Plan of Operations are designed to reduce sedimentation below regulatory standards. Sedimentation impacts to riparian areas will be minimized to levels that are experienced naturally during peak runoff and high intensity storm events through erosion control measures. Such measures are specifically identified in the reclamation plan, and include:

- Using siltation fences, berms, and hay or straw bales to catch sedimentation above drainage systems during earthmoving and grading operations,
- Rerouting runoff and drainage around overburden disposal areas, topsoil, and ore stockpile areas,
- Placing culverts at all road crossings,
- Revegetating all available surfaces as soon as possible, and
- Using berms, terraces, mulches, and tackifiers to resist erosion.

Letter #14 (Cont.)
COMMENTS

Rod Herrick
October 11, 1996
Page 2

E Numerous bat species have been documented in the Battle Mountains. Surveys conducted at the Copper Canyon/Horse canyon sites on the east side of the Battle Mountains documented *Corynorhinus townsendii, Antrozous pallidus* and *Myotis yumanensis* in the vicinity. In addition we would expect *Myotis ciliolabrum, M. californicus, M. volans* and *M. evotis* to be found as well.

One golden eagle nest is documented in the project area. Other nongame birds and mammals associated with the sage brush and mountain shrub communities would be expected to be in the vicinity of the project area as well.

The Nevada Division of Wildlife appreciates the opportunity to contribute this information in an effort to provide the best possible environmental analysis to protect and benefit wildlife. Please feel free to contact me for additional information or comments that you may have on this input.

Sincerely,

Rory E. Lamp

Rory E. Lamp
Biologist
1375 Mountain City Highway
Elko, NV 89801
(702) 738-5332

RL
cc: Habitat Division
Nevada State Clearinghouse
Gerald Smith, District Manager, Battle Mountain District, BLM
Leo Drozdoff, Chief, Bureau of Mining Regulation and Reclamation
Larry Teske, Pete Bradley
File

RESPONSES

E Bat species potentially occurring in the project area were listed on Table 3-18 of the DEIS. Other non-game birds and mammals associated with the sagebrush and mountain shrub communities are discussed in Chapter 3, Section 3.10.1 of the DEIS.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street [illegible] 13 [illegible]
San Francisco, CA 94105

April 8, 1998

Rodney Herrick, EIS Project Manager
Bureau of Land Management, Winnemucca District
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445

Dear Mr. Herrick:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the **Trenton Canyon Project, Humboldt and Lander Counties, Nevada.** Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and Section 309 of the Clean Air Act.

The DEIS analyzes the impacts of a proposed gold mining project which would involve expansion of the currently permitted Valmy and North Peak operations and mining of the Trenton Canyon deposit. Mining would be by open pit methods and the operations would involve construction and operation of multiple open pits, two new heap leach facilities, eleven overburden rock piles, and processing and ancillary facilities. The proposed action, would disturb approximately 2,682 acres (combined permitted and expansion acres on Federal and private land) over a period of about seven years and involve the excavation of approximately 152,000,000 tons of material.

We have rated this DEIS as EC-2 -- Environmental Concerns-Insufficient Information. (See the enclosed "Summary of Rating Definitions and Follow-up Action"). Our rating reflects concerns over the lack of analysis of a reasonable range of project alternatives, and potential impacts to "Waters of the U. S." and related aquatic resources from the proposed action. Some sections of the DEIS do not provide sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. We expect that additional information in the Final EIS (FEIS) may alleviate or reduce these concerns. With regard to referenced environmental degradation in the project area, the NEPA process should foster excellent action [40 CFR 1500.1 (c)] and accurate scientific analysis [40 CFR 1500.1(b)] to ensure minimization of further degradation. EPA's concerns and requests for additional information are discussed in greater depth in our detailed comments, enclosed.

Letter #15 (Cont.)

COMMENTS

We appreciate the opportunity to review this DEIS. Please send two copies of the FEIS to this office at the letterhead address (mail code CMD-2) when it is officially filed with our Washington, D.C., office. Should you have any questions, please contact me at (415) 744-1584, or Karl Kanbergs at (415) 744-1483.

Sincerely,

David J. Farrel, Chief
Federal Activities Office

002752/98-035
Enclosure

RESPONSES

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommend for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Alternatives Analysis

A The Proposed Action involves expansion of the currently permitted Valmy and North Peak operations and mining of the Trenton Canyon deposit, by open pit/heap-leach methodology, with attendant ancillary facilities. BLM should emphasize and clarify in chapter 1 of the FEIS that the Proposed Action, identified as the "Trenton Canyon Project," refers to all three project areas.

B The DEIS analyzes four options in detail, including a no action alternative, and three waste rock disposal options (modification of waste rock pile configurations and two backfill scenarios--complete backfill and sequential backfilling). In effect, the no action alternative is the only true project alternative described in the DEIS. Even under "Alternatives Considered But Eliminated From Detailed Analysis," there is no mention of any reduced-size-of mining, or modification-of-mining-rate alternatives. Pursuant to 40 CFR 1502.14, BLM should analyze a range of reasonable project alternatives in the FEIS, rather than a single "project alternative" with several variations. Such an analysis is also relevant for the sequential backfill variation.

C We commend BLM for identifying a Preferred Alternative which is (DEIS, pg. 2-58): "...the Proposed Action with the sequential backfilling [Trenton Canyon Deposit] of overburden materials..." However, the document concludes that this alternative would only be undertaken if economically feasible. BLM implies that the project proponent would adopt this alternative if profits were to be optimized by that specific action. Under the "Aquatic Resources" section of our letter we have expressed concerns that placement of waste rock piles above Cottonwood Creek could impact water resources and related biologic resources. Our concerns regarding potential impacts to aquatic resources would be considerably reduced if waste rock piles TC-4, TC-5 and TC-6 could be eliminated or reduced, as they would be under the sequential backfilling scenario.

BLM's analysis of the sequential backfilling option appears to be incomplete because it does not provide assurance of any meaningful reduction in waste rock disposal in this area. The FEIS should explain why additional waste rock disposal areas could not be located in sections 13 or 12, away from the creek, or why, with five proposed pits at the Trenton Canyon Deposit, it is not feasible to completely eliminate waste rock sites TC-4, TC-5 and TC-6. BLM's analysis appears to focus on economic optimization schemes rather than on an attempt to balance the proposed operations with environmental protection measures. The FEIS, should include additional information clarifying the feasibility of the backfill alternative, based on project specifics. BLM should provide its rationale for determining whether the sequential backfilling option would be included as a condition of the Mine Plan of Operation and stipulated in the Record of Decision (ROD).

A This change has been made in Chapter 3, Modifications to the Draft EIS, page 3-1. The Proposed Action includes all three of these deposits.

B Both the reduced size of mining alternative and a modification of mining rate alternative have been analyzed in the FEIS and eliminated from further consideration (refer to Alternatives Considered but Eliminated From Detailed Analysis in Chapter 3 of the FEIS, page 3-20). Because these alternatives have been eliminated, analyzing a sequential backfill variation for these alternatives would not be relevant.

C Under the Proposed Action, a rock catchment berm would be placed along Cottonwood Creek to intercept surface drainage, and would, along with other Best Management Practices and measures, mitigate the potential aquatic impacts of the overburden disposal areas TC-4, TC-5, and TC-6. BLM is satisfied that the resources of Cottonwood Creek would be adequately protected.

Where possible the overburden disposal areas were located away from the Cottonwood Creek drainage. There is a significant topographic ridge that separates the northwestern Trenton Canyon pits from those in the southeast. In the Proposed Action, overburden from the northwestern pits would be placed in TC-1 and TC-2 (Section 13) and in TC-3, all of which are outside of the main reach of Cottonwood Creek. Overburden from the southeastern pits could not feasibly be hauled to Section 13 or 14 due to the natural topography. Overburden would be placed in TC-4, TC-5, and TC-6, which were located to minimize the surface area exposed to erosion (compare Proposed Action to Expansion of TC-6).

The location of the southern pits, which contribute overburden material to disposal areas TC-4, TC-5 and TC-6, provide for logistically unfavorable overburden hauls to the west side of the Trenton Canyon "ridge." The exit (haulage ramp) from the main south pit is at elevation +/-7,300 feet. The nearby ridge, at elevation +/-7,850 feet is approximately 1,000 feet of horizontal distance from the pit exit. Logistically this would create a series of tight area, steep terrain and inefficient

Response to 15C continued on the next page

COMMENTS

RESPONSES

(Continued)

C switch-back laden overburden hauls to cross the ridge in support of overburden placement in Section 13. Assuming a 10 % ramp grade introduces an incremental haulage distance of 5,500 feet to cross the ridge, plus the additional down-hill haul required for actual placement of the overburden in Section 13. Following the appropriate contour around the northern pits, into Section 12, creates an incremental haulage distance of greater than +/-8,000 feet. The incremental haulage distance references the proposed placement of overburden material into disposal areas TC-4, TC-5 and TC-6 as the baseline. Consideration of lengthier and logistically problematic overburden haulage profiles have a substantially negative effect on the economics of the south pits and would not meet the defined purpose.

BLM intends to stipulate the partial sequential backfill alternative in the Record of Decision, which could further mitigate potential impacts of the Proposed Action. While the potential impacts from the Proposed Action are not considered significant, under the partial sequential backfill alternative, potential impacts could be reduced if backfilling is determined to be economically feasible. Please refer to DEIS pages 4-18, 4-24,4-30, 4-35, 4-39, 4-44, 4-47, 4-53, 4-56, 4-61, 4-71, and 4-84 to 4-102 (Cumulative Effects) for descriptions of the mitigating effects of this alternative.

COMMENTS

Trenton Canyon Project DEIS
EPA Comments -- April 1998

D The intent of Section 102(B) of NEPA is to encourage Federal Agencies to balance environmental amenities and values with economic and technical considerations, in **decision making**. The NEPA process should help ensure an environmentally sound project. EPA strongly recommends that BLM work further with Newmont in crafting a workable waste rock disposal and partial backfill sequencing plan that avoids potential threats to Cottonwood Creek and minimizes post-reclamation visual impacts. (See 40 CFR 1508.20-- mitigation by "avoidance" or "minimization"). The analysis, conclusions and support data for this plan should be provided in the FEIS. Similarly, BLM should review the mine plans in context of the Pollution Prevention Act of 1990. The Act states "that pollution should be prevented or reduced at the source whenever feasible." Repositioning of the described waste rock sites could reduce water quality degradation and should therefore be considered a reasonable pollution prevention measure.

Project Description/Additional Information

E The description of the Proposed Action is incomplete. Additional information may reduce our serious concerns regarding potential environmental consequences of the proposed action. Our detailed request for amplification of project description and inclusion of additional information follows. Also, a similar request, related exclusively to water issues, is included in the "Aquatic Resources" section. BLM should devote "substantial treatment to each alternative considered" [40 CFR 1502.14(a)]. The planned design aspects of heap leach facilities should be described in the FEIS. This would include description of proposed liner design and thickness, geotechnical stability considerations, description of overliner material, drainage requirements and type of application device (drip or emitter). The crushing facilities and pond system, and appropriate mitigation measures, should also be described, including provisions designed to deter wildlife from coming in contact with cyanide-containing solutions, and a more detailed map should be provided of all three proposed and/or existing process facilities. The FEIS should also state whether cyanide solution will be added to crushed ore prior to placement on the pad and provide assurance that appropriate spill-prevention countermeasures are put in place. Similarly, on Pg. 4-27 of the DEIS, BLM states that containment areas will be constructed to mitigate potential hazardous material spills. Would these areas be lined or cemented?

F BLM should provide additional information on the Valmy and North Peak deposits. The FEIS should include estimated mine tonnage and waste rock tonnage for each deposit. The Valmy and North Peak deposits should be depicted in cross section, with ultimate pit outlines and estimated water table elevations. Discussion of all three areas should also be accompanied by a more detailed geologic map, to aid in understanding of environmental consequences and potential impacts of the Trenton Canyon Project. By analyzing the three ore deposit areas in one EIS, BLM has properly interpreted the concept of connected actions as described at 40 CFR 1508.25. To achieve fully effective NEPA analysis, we therefore encourage BLM to strive for professional

2

RESPONSES

D BLM agrees that environmental amenities and values and other factors must be considered with economic and technical considerations in the final decision. BLM has worked closely with Newmont to minimize and mitigate potential visual, water quality, or other impacts. BLM believes that the Plan of Operations and State of Nevada permit requirements contain adequate measures to both prevent pollution according to the Pollution Prevention Act of 1990 and to respond appropriately to accidents, spills, or other contingency situations. BLM believes that a workable overburden disposal plan has been presented in the DEIS. BLM does not agree that repositioning the overburden disposal areas would reduce water quality degradation. BLM does not believe it is reasonable to hold Newmont to the partial sequential backfill alternative, because of the economic, technical, and operational variables.

E The project description for containment areas and heap leach and other facilities have been expanded in Chapter 3 of the FEIS, page 3-3. The Plan of Operations states that the cyanide solution would be applied by either drip emitter or sprinkler. BLM believes that process facilities are adequately depicted on DEIS Figures 2-4 and 2-5. Mitigation measures planned to keep wildlife from coming into contact with the solution ponds are in the Plan of Operations and are described in Chapter 3 of this FEIS, page 3-10. Cyanide solution would not be applied to the crushed ore prior to placement on the heap leach pad.

F Section 2.4.1 of the DEIS (page 2-17) in the first sentence should state that open pit mining of the Trenton Canyon Project would result in removal of an additional 25 million tons of ore and 112 million tons of overburden material for a total of 30 million tons of ore and 122 tons of overburden material. This sentence has been revised in Chapter 3, Modifications to the Draft EIS, page 3-3.

Table FEIS-1 (Chapter 3 of this FEIS, page 3-3) estimates mine and overburden tonnage for each of the deposits. Valmy and North Peak cross section locations and cross sections showing water levels and pit bottoms have also been added to FEIS Chapter 3 as Figures 3-2B, 3-2C, 3-3A, and 3-3B, beginning on page 3-25. Geologic cross sections of the Valmy deposit and cross section location map similar to DEIS Figures 3-7 through 3-10 are also provided in Chapter 3 as Figures 3-8A and 3-8B, page 3-31.

Letter #15 (Cont.)
COMMENTS

F and scientific integrity of the document [40 CFR 1502.24] and include the additional requested information on the mentioned deposits.

G Mercury has been identified in the Trenton Canyon Project rocks. The FEIS should state whether ore at any of the deposits will contain mercury, in which case a mercury retort should be required for the gold recovery circuit.

H Page 2-14 of the DEIS mentions "barrel handling" facilities and bioremediation facilities. The purpose for these facilities, and a brief description, including potential impacts and mitigation measures should be included in the FEIS.

I Page 2-17 of the DEIS describes haul road widening to 100 feet. The FEIS should explain why this width is necessary, and if pullout stations could not serve the same purpose.

Cumulative Impacts

J Dewatering operations are ongoing at the nearby Lone Tree Mine. The FEIS should show the current and projected cone of depression for this action and note whether the dewatering effects "intrude" into the project area. The DEIS should discuss potential (cumulative) impacts to springs in the Valmy mine area, possible effects on perched groundwater zones, and whether the existing water table elevation has been influenced by dewatering at Lone Tree. Once dewatering ceases at Lone Tree, could the Valmy pits fill due to water table recovery, and if so, would resulting pit lake water quality be acceptable? The potential for this scenario should be thoroughly discussed in the FEIS.

K An extensive exploration history is documented for the project area. Under "Reasonable Foreseeable Future Activities/Geology and Minerals," the potential for additional mineralization within the project area is mentioned but not affirmed. BLM should describe any known probable reserves in the greater project area or at depth (in addition to the described Marigold and Lone Tree mines). Specifically, we request that any known deeper or peripheral mineralization within the Trenton Canyon Project area, and its geochemical characteristics, be discussed in the FEIS. This should include plans for any future development.

AQUATIC RESOURCES

Introduction

L EPA is very concerned that the current mine plan design at the Trenton Canyon Deposit could impact water resources and related biologic resources within segments of Cottonwood Creek.

RESPONSES

G A mercury retort is not required for the Trenton Canyon Project because the final stage of Newmont's gold refining process is conducted at the Lone Tree Complex. The Lone Tree Complex uses a mercury retort.

H Bioremediation facilities provide on-site treatment and/or disposal of hydrocarbon-contaminated soil generated by the project as a direct result of mining activities. Please refer to the expanded description of the barrel handling and bioremediation facilities in the Project Description included in Chapter 3 (page 3-16) and Appendix B of the FEIS. Potential impacts and mitigation measures are included in these descriptions.

I BLM believes the proposed road width of 100 feet best meets the agency's standards and requirements for safely operating haul trucks simultaneously with other local and mine-related vehicular traffic. Pullout stations alone would be inadequate to accommodate haul truck encounters with local traffic.

J There is no potential for pit lakes to be formed after dewatering ceases at Lone Tree (please refer to the water resources cumulative effects section in Chapter 3 of this FEIS, page 3-62). Figures 3-3A and 3-3B of this document and Figure 3-3 on page 3-23 of the DEIS illustrate the distance from the bottom of the proposed pits to the existing groundwater table, which in most cases is approximately 200 feet or more. The maximum extent of the predicted cone of depression from dewatering at the Lone Tree Mine Project would have no effect in the area of the proposed Trenton Canyon Project.

K BLM is not aware of any plans for future development, which are not already identified by the submitted Plans of Operations.

L BLM states that 29 acres of Cottonwood Creek is a jurisdictional wetland, and that an additional 14 acres of various stream reaches were designated Waters of the United States, elsewhere in the project area. BLM should state whether this jurisdictional delineation was accomplished by the Army Corps of Engineers. The FEIS should include a detailed map showing the jurisdictional boundaries and relationship to the proposed mining activities. The Trenton Canyon deposits are located within the drainage basin of the described wetlands. Despite the presented waste rock and pit wall characterization, EPA remains concerned about potential degradation of water quality within Cottonwood Creek and the general health of the wetlands ecosystem; both from waste rock pile placement and associated leaching potential, and from the increased surface area resulting from pit excavation. We are also concerned that the proposed berm, designed to keep silt and debris out of Cottonwood Creek, could impair the wetland function by decreasing or modifying water flow or quality. Our specific concerns are outlined in the following sections. Again, by designing and committing to a "workable" sequential backfill alternative, as described under Alternatives, many of our concerns would be eliminated or reduced.

Water Quality and Waste Rock/Pit Wall Rock Characterization

BLM concludes that leaching through waste rock piles or pit walls would not significantly impact water quality. EPA acknowledges that owing to a fairly deep water table, significant impacts to groundwater resources are probably low. However, particularly for the Trenton Canyon area, the DEIS clearly demonstrates that both surface water (in Cottonwood Creek) and groundwater is currently affected by the mineralized bodies. On page 3-25 of the DEIS, a change in aqueous groundwater geochemistry down gradient of the mineralization is documented. Increases in such constituents as arsenic, sulfate, and lead are noted. We are concerned that the elevated sulfate levels are described as "...probably due to groundwater circulation through the oxidized ore body." Sulfate is a product of oxidation, and a likely deduction from presented chemistry is that oxidation is ongoing within the ore body. Analysis of surface waters indicates potentially significant concentrations of lead and other constituents that exceed aquatic life standards. Finally, the waste rock/pit wall characterization concludes that long-term seepage through waste rock piles would produce drainage waters that exceed secondary sulfate standards, but with the possible exception of selenium, be approximately the same or less in concentration of heavy metals than natural waters. The data presented clearly demonstrate that the project would contribute to cumulative chemical loading to surface and groundwater. Listed below are specific questions/points of clarification that should be addressed in the FEIS:

M 1. Both surface water and groundwater analyses indicate elevated levels of lead; however, the leach tests performed on waste rock and/or wall rock does not report lead. These analyses should be incorporated into the FEIS. BLM should also explain the significance of the naturally occurring (?) lead anomaly.

L The report, *Wetland Delineation and other Waters of the United States Inventory*, was prepared for the Trenton Canyon Project by Resource Concepts, Inc. The Corps of Engineers will review the permit application and proposed mitigation measures, along with the analysis and comparison of alternatives in the DEIS, prior to issuing a 404 permit for the Trenton Canyon Project. BLM agrees that the findings of the wetland report are preliminary until the Corps has reviewed the analysis for compliance with the Section 404 (b)(1) guidelines. The Corps recently performed a field verification of the wetland delineations and delineated an additional 0.11 acres of jurisdictional Waters of the U.S. Of this acreage, 0.05 acres will be impacted by proposed project facilities. These new acreage figures have been addressed in Chapter 3, Modifications to the DEIS, pages 3-20, 3-38, 3-56, and 3-66. New figures delineating Waters of the U.S. and jurisdictional wetlands in relation to the proposed facilities have been added to the FEIS as Figures 3-15A and 3-15A1. Wetland functions could not be impacted by the water quality (e.g., silt and debris) of Cottonwood Creek, since the waters flowing into Cottonwood Creek from the project area do not flow into any wetlands.

M The kinetic testwork showed consistently undetectable lead concentrations (<0.005 mg/L, <0.002 mg/L) except for isolated slightly elevated concentrations due to flushing at the beginning of the tests.

Some lead is associated with the mineralization but not in the form of lead sulfide. The lead may be associated with residual lead sulfate (anglesite) produced by oxidation of lead sulfide, lead carbonate, lead adsorbed on iron oxides and lead associated with clays. The low but detectable lead concentrations observed in groundwater and surface water probably represent slow dissolution of the above minerals. The observed concentrations are typical of groundwaters associated with mineral deposits.

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N 2. According to the DEIS, sulfate concentrations could exceed Federal and state standards during low base flows. We are very concerned that leachate concentrations from the waste rock piles planned above Cottonwood Creek, are predicted to exceed 1000 mg/l in sulfates (Table A-4). The FEIS should describe existing or potential future impairment of, and any beneficial water uses from, the described situation. In addition, BLM should state whether Cottonwood Creek is listed or would qualify to be listed as an impaired "water quality limited segment" under CWA section 303(d) guidelines.

O 3. BLM should state in the FEIS whether seasonal snowmelt, plus infiltration from perched zones, could create seasonal pit lakes with attendant potential chemical or physical threats to wildlife. Factual data should be included to support conclusions.

P 4. In terms of rock chemistry, it is not clear what was sampled and what portion of the tested material is representative of waste rock, verses wall rock. For example, Table A-1 summarizes acid base accounting by waste rock area, but does not refer to wall rock. The FEIS should provide appropriate clarification. As described on page 3-40, pyritic Valmy siltstone comprises up to 11% of rock volume. The FEIS should explain which deposit is referred to. According to literature, a net neutralizing potential (NNP) of less than twenty could potentially produce long-term acid rock drainage. Only one of the six groupings listed in Table A-1 has an NNP of greater than 20, thus we conclude that the acid generation characteristics of the material are questionable. This should be further discussed in the FEIS.

Q 5. There is insufficient information, or the information provided does not clearly conclude that, once mining is completed, whether mineralized zones in pit walls exposed to infiltrating snowmelt and seeps could contribute to chemically degraded interflow, with potential to affect the Cottonwood Creek drainage. Some of the proposed Trenton Deposit pits are very proximal to Cottonwood Creek and the pit bottom elevations are approximately equal to the creek elevation. We could not find any information in the DEIS that specifically addresses effects to surface or groundwater from this process. BLM should clarify what, if any, specific studies have been done, and conduct additional studies as appropriate. We are also very concerned that the combined potential effects of infiltrating pit waters and leachates from overburden piles have not been discussed. This information should be included in the FEIS.

R We also question whether pit backfilling could lead to leaching of metals and sulfates. The FEIS should clarify this issue, the possibility of interflow, conceivably aided by blasting-facilitated fracture permeability, and the potential for any waters with substantial sulfate or metal loading to reach the creek. Consideration of any special backfill methods, such as blending of waste rock, etc. should be discussed.

N This text was written based upon calculations that predicted sulfate concentrations presented in Appendix A, Table A-8 of the DEIS. The sulfate concentrations that are shown as exceedances in this table should be revised for the following reasons:

- Four of the exceedances are shown for Station CCS-4A, which is located on a spring that feeds into Cottonwood Creek. In performing the mixing calculations, it was assumed that all of the seepage calculated as entering Cottonwood Creek from the overburden disposal areas would mix with water flowing out of the spring. However, it is unlikely that all the seepage would report to the spring, so predicted concentrations at Station CCS-4A are conservative. If only a small percentage of the seepage enters the spring, resulting sulfate concentrations would probably be below reported drinking water standards. Mix calculations performed using water quality measurements collected at stations along Cottonwood Creek at points upstream and downstream from where spring CCS-4A enters the creek indicate that sulfate standards would be met. Periodic monitoring at Station CCS-4A will be performed to verify water quality during mining operations.

- The other exceedance shown in Table A-8 is for Station CCS-05. This exceedance was an artifact of an excessively conservative assumption made in the mix calculation. The estimate of stockpile seepage flows made by SMI (SMI, 1997) were dependent upon the tributary watershed area above the two Cottonwood Creek stations. Maximum contributions to the creek from stockpiles TC-4, TC-5, and TC-6 were estimated as an aggregate 1.07 gpm at Station CCS-06 and 3.18 gpm at Station CCS-1A. To be conservative, the 1.07 gpm seepage was applied in the mix calculations to all creek stations above CCS-06, and the 3.18 gpm seepage was applied to all stations between CCS-1A and CCS-06. The application of the 3.18 gpm stockpile seepage to the 5 gpm flow at station CCS-05 results in the calculated exceedance shown in DEIS Table A-8. CCS-05 is essentially contiguous to CCS-06 (see Figure 3-1 of the DEIS), therefore the flowrate estimates for CCS-06 (1.07 gpm) should have been used for Station CCS-05. In this case, the calculated sulfate concentration for 9/26/96 conditions is 208 mg/L, below the 250 mg/L standard. The value for the exceedance at CCS-05 on 9/26/96 has been revised and is addressed in Chapter 3, Modifications to the Draft EIS, page 3-80.

This use of two different seepage values based upon station location was explained in Appendix A of the DEIS. Table A-6 will also be revised in Chapter 3 of this FEIS, page 3-80.

Responses to comments O-R are presented on the following pages.

O Pit lakes are not anticipated under the expected geologic and hydrologic conditions. However, if water were to form on the bottom of the pits, the chemistry of the rocks would not cause the water to become acidic.

P (a) Wall Rock Representation

Newmont has reviewed the composition of the pit walls with respect to the distribution of samples used to characterize overburden. The Regional Geologist does not believe that there will be significant mineralization remaining in the pit walls (but may occur at depth below the pit bottom). The geology of the Trenton Canyon Project mineral deposits is such that they lack broad alteration haloes commonly associated with other deposits in northern Nevada. The required pushback of walls to achieve required wall angles would effectively remove all mineralization, including any sulfide minerals from the pit walls.

(b) NNP Classification of ARD Potential

The NNP<20 kg CaCO3/t criterion for potentially acid generating waste has generally been replaced by consideration of the ratio of ANP to AGP and the absolute sulfur and ANP values. A discussion of this approach can be found on page A-1 of the DEIS. The reason for this change in approach can be demonstrated by example:

- In the case where sulfur concentrations are high (say 10%), the AGP would be 313 kg CaCO3/t. The ANP corresponding to the NNP=20 kg CaCO3/t would be 333 kg CaCO3/t. These two values are very close and within analytical error. The corresponding ANP/AGP ratio is 1:1. This would be considered a material for which further investigation would be required to evaluate the acid generation potential.

- In the case where sulfur concentrations are very low (say 0.3%), the AGP is 9 kg CaCO3/t, the ANP would be 29 kg CaCO3/t and the ANP/AGP ratio is 3.2 which would not be considered a potentially acid generating material in most jurisdictions. Clearly, the ANP far exceeds the AGP.

- In the case where sulfur concentrations are negligible (say 0.01%) and there is no measurable NP (0 kg CaCO3/t), the ANP/AGP would be 0. Using the ratio, the material would be classified as acid generating but the material is actually "inert" because there is no sulfur to generate acid.

Response to comment P is continued on the following page.

P (Continued)

The first two examples illustrate that the ANP/AGP gives a more accurate indication of the acid generation potential. In addition to the numerical advantages, the consumption of alkalinity does not occur on an exact 1:1 mole basis for sulfur oxidized as assumed in the original NNP calculation (see Sobek et al., 1978). Usually, 1 to 2 moles of carbonate are required to neutralize the acid associated with 1 mole of sulfur. The ratio more accurately reflects the chemistry of the process. The third example shows that the NNP and ANP/AGP ratio can be misleading if a material (for example, a quartz sand) contains no acid generating or acid consuming components. For these types of materials, the reactive (i.e., sulfide) sulfur content of the material gives a better indication of acid generation potential. The Province of British Columbia in Canada has established a sulfide criterion of 0.3% below which materials are considered inert. This is probably conservative but is consistent with the general observation that a certain amount of sulfur is required for significant acid to be produced. It is conceivable that fine-grained pyrrhotite or marcasite could produce acid at lower concentrations but these minerals are not present in the Trenton Canyon Project deposits.

Q Under some circumstances, pit walls can be a source of poor quality groundwater though these conditions do not exist in any of the proposed pits at Trenton Canyon. The main conditions that could produce poor quality water are:

- A net acid generating balance in certain portions of the walls; and/or
- Zones of net acid generation with high sulfur concentrations (several percent) and low ANP/AGP (<<1) that could release heavy elements which would not be subsequently precipitated by contact with acid consuming rock or mixing with alkaline groundwater.

As noted in response P(a) above, the pit walls are not composed of extensively mineralized rock. Sulfur concentrations are not expected to vary more than the overburden samples, and the pit walls are non-acid generating on balance. No extensive zones of net acid generation potential are anticipated. Due to the lack of conditions that could result in contribution of elevated heavy element loads to pit runoff during the snowmelt, it is expected that runoff and seeps in the pitwalls would be more dilute or comparable to existing natural groundwater in the vicinity of the pits. The depth to groundwater also indicates that heavy element concentrations in pit water joining groundwater would be attenuated by contact with rock containing carbonates beneath the final pit level. Mixing with alkaline groundwater would also be expected to provide attenuation.

Response to comment Q is continued on the following page.

RESPONSES

Q (Continued)

The emphasis in the DEIS was therefore on predicting water chemistry for the overburden which represents a much greater surface area for leaching, greater retention time in the rock mass and less opportunity for downgradient attenuation prior to entering the receiving environment.

As a mitigation measure, monitoring of rock during mining could allow isolated zones of visible pyrite mineralization to be identified, and if indicated by testing, these could be removed by overblasting (if practical) or capped to enhance runoff.

R The main issues with backfilling are the rate at which salts accumulate in the backfill due to oxidation prior to re-handling, and the availability of water to leach the salts in the backfill. Overburden will weather in the disposal areas and salts will accumulate since not all salts are leached by infiltration. Rapid release of these salts can result if the backfill is dumped into standing water or the pits flood. Dumping into standing water potentially causes the greatest impact. Since the pits will not flood, this release mechanism is not available. The main release mechanism is therefore by infiltration through the backfilled mass. The leachate chemistry would be expected to be very similar to the external disposal areas. It was assumed for the external disposal areas that leachate would be saturated with respect to gypsum and heavy element concentrations would be controlled by pH. The same conditions will exist within the backfill and therefore the impact on water quality would be the same as for external disposal areas or less. A lessor impact is expected due to the attenuation of heavy element concentrations by contact with carbonate minerals below the pit bottom and mixing with alkaline groundwater. In conclusion, the backfill alternatives do not require a separate impact assessment.

The climatic conditions at the time of re-handling are also a potential concern because prolonged rainfall events can lead to short term leaching of accumulated salts and discharge in runoff to surface waters. Limiting the exposure of weathered rock during re-handling can mitigate this potential impact. Testing of soluble salt content in advance of overburden re-handling would provide the best indication of the potential impact and requirements for mitigation measures (such as short term drainage treatment).

Letter #15 (Cont.)
COMMENTS

Trenton Canyon Project DEIS
EPA Comments -- April 1998

Construction of Berm and Clean Water Act (CWA) 404 and 401 Permits/Certifications

S The proposed berm, designed to keep silt and debris out of Cottonwood Creek, is located within the drainage basin of the jurisdictional waters, and could impair wetland functions by decreasing or modifying water flow or quality. In the FEIS, BLM should describe any expected impairment to the wetlands from the berm placement. BLM notes that a CWA section 404 permit will be required. Would this be a nationwide or individual permit? We assume that the berm is located outside of the jurisdictional waters, however if significant quantities of water are diverted or affected, this may have bearing on the need for an individual permit. BLM should also state whether a CWA Section 401 water certification is required.

Miscellaneous Water-Related Comments

T 1. Pg. 4-14 of the DEIS states that infiltration of meteoric waters through the waste rock piles would be unlikely to produce perennial flows, therefore surface waters would not be impacted. In this semi-arid environment, seasonal flows are an integral part of the ecosystem. BLM should describe whether the waste rock piles would contribute to seasonal flows and whether the expected surface water quality would pose any risk to biologic resources.

U 2. Based on Figure 3-1, the existing and proposed shop/office area is proximal to the lower reaches of Cottonwood Creek. BLM should discourage placement of structures and equipment near the creek, as a best management practice designed to protect aquatic resources.

LAND USE, VISUAL IMPACTS AND RECLAMATION

V According to the DEIS, the Cottonwood Creek riparian community has been disturbed. Sections of the document refer to grazing activities and use of the creek area during cattle drives and other herding activities. The Proposed Action would disturb 2,682 acres; therefore, increased grazing pressure would be expected on remaining lands. In the FEIS, BLM should explain what provisions are being taken to reduce environmental impacts to rangelands and riparian areas/springs, including jurisdictional waters, as a result of the ongoing and possible mining-related environmental degradation.

W EPA is concerned about visual impacts and also encourages reclamation concurrent with mining activities. The DEIS notes that 260 acres has previously been disturbed due to exploration activities. The FEIS should include a map showing all existing disturbance, and BLM should describe reclamation that could proceed concurrent with mining. The scenic quality of the project area is rated low, with a "C" rating. The post-reclamation simulations suggest that unreclaimed pits would be highly visible. This situation further supports our recommendations

6

RESPONSES

S Wetland functions would not be affected by the rock catchment berm along Cottonwood Creek. Please refer to response to comment L above.

Based on information from the U.S. Army Corps of Engineers, the project would likely be permitted under Nationwide (NW) permits (e.g., NW 12 for utility crossings, NW 14 for minor road crossings), including NW 26 for discharges above headwaters and within isolated waters. However, the NW 26 will expire on December 13, 1998, and such permitting will not be available until an alternative permit procedure is formulated. Therefore, an Individual permit may be required. The berm is located outside jurisdictional waters. A 401 Certification or waiver under the Clean Water Act would also be required.

T The Valmy and North Peak watersheds do not appear to have flows within their defined channels other than during periods of direct rainfall runoff. The methodology used to estimate seepage from the overburden disposal areas into the channels assumes saturation of a sufficient portion of the overburden over time to generate seepage into the existing channels. For this long-term buildup to occur (and the geochemical estimates of seepage water quality also assume long term contact with the overburden), the infiltration rate into the stockpile has to exceed the infiltration rate into deep groundwater. In the Cottonwood Creek watershed, the generation of seepage from the natural watershed clearly occurs (i.e., there is some baseflow in the creek during periods between rainfall), and the potential exists for similar seepage from overburden disposal areas placed within the watershed. The potential impacts from seepage was analyzed in the DEIS, pages 4-10 through 4-15. In the Valmy and North Peak watersheds, there is no apparent baseflow in the creekbeds between rain events, and there is a reasonable assumption that seepage into the creekbeds of water that has been in long term contact with the overburden is unlikely to occur.

U Figure 3-1 of the DEIS shows the generalized location of the shop/office area, which incorrectly shows this area overlaying the streambed of Cottonwood Creek. The shop/office area is an appropriate distance away from Cottonwood Creek as correctly shown in Figure 2-5 of the DEIS.

V BLM will consider reducing the total number of animals allowed in the grazing allotments. In addition, BLM will consider stipulating that water troughs be developed to allow for greater use of the North Buffalo and Copper Canyon range allotments (refer to page 4-56 in the DEIS). With the mitigation that will be stipulated in the final decision, BLM does not believe that the project would cause increased grazing impacts on rangelands, riparian areas, springs, wetlands, or jurisdictional waters. To mitigate for existing impacts on these resources from grazing is beyond the scope of this document.

Response to comment W is presented on the following page.

Letter #15 (Cont.)
COMMENTS

W that BLM ensure pit backfilling, if it is reasonably feasible.

MITIGATION AND MONITORING

X EPA strongly recommends that a comprehensive summary, preferably in table/matrix form, identifying various potentially significant environmental impacts resulting from the proposed operations and the corresponding proposed mitigation and monitoring provisions be included in the FEIS. Various mitigation proposals are interspersed with other text in chapter 4 of the DEIS; however, the same chapter notes that "numerous design features and planning elements which would effectively mitigate potential impacts..." are contained in the Plan of Operations (POO) and the Reclamation Plan. An EIS should "include appropriate mitigation measures not already included in the proposed action or alternatives" [40 CFR 1502.14(f)]. All appropriate mitigation measures should be discussed in the FEIS.

Y We also found some of the proposed mitigation insufficient. For example, on Pg. 4-19, it states that "Monitoring of Cottonwood Creek for suspended solids and turbidity would be advisable..." It is our recommendation that complete monitoring for suspended solids, turbidity, and geochemistry should be done. In the groundwater section, BLM proposes no mitigation and periodic monitoring. In light of the questionable nature of leaching potential from waste rock piles and pit walls, EPA recommends that a program of waste testing (static tests, leaching tests, and kinetic tests if warranted) throughout project life, be implemented, and appropriate modifications are made to the overburden disposal plan, as required. Provisions for, and

Z locations of, groundwater and vadose zone monitoring wells should be discussed in the FEIS. We also ask that information on the heap leach pad leak detection system and monitoring be included in the FEIS.

AA Potential negative impacts to springs in the Valmy Mine area are mentioned. Mud Spring "... is dependent on flows from an unnamed drainage... which would be affected by overburden disposal areas, haul road and placement of a waterline for the Valmy pit area." Especially because this spring is a jurisdictional wetland, appropriate mitigation provisions should be included in the FEIS to assure less than significant impacts. Mitigation measures should also be discussed for other potentially affected springs mentioned in the DEIS, such as Ames Spring, regardless of existing degradation level.

AIR

BB The section on ambient air quality appears to be somewhat disorganized. National Ambient Air Quality Standards (NAAQS) and project area baseline conditions should be included in chapter

RESPONSES

W The unreclaimed pits would be visible from I-80, as indicated on the visual simulations that were prepared for the DEIS, however visual impacts would not be significant, particularly following mitigation and reclamation (refer to pages 4-61 through 4-72 in the DEIS). Reclamation would proceed on the overburden disposal areas following termination of mining activities in that area.

BLM does not believe that it would be reasonably feasible to require total pit backfilling, and this was evaluated and documented in the DEIS as an alternative eliminated from further consideration (refer to revised Section 2.7.4 in this FEIS, page 3-19).

A map of existing exploration disturbance is included in the Trenton Canyon Exploration Plan of Operations #N26-96-001P. BLM does not agree that a map of all existing disturbance is necessary to include in this FEIS because existing activities on public lands that may disturb or have disturbed the ground surface have a reclamation component and bonding tied to that activity. At any given time the amount of disturbed ground surface, the ground surface under reclamation, and the ground surface reclaimed within the project vicinity vary.

X A mitigation and monitoring summary (Table FEIS-4) has been completed and is included in Chapter 3 of this document, page 3-63.

Y These concerns for mitigation and monitoring will be considered in the final decision. Furthermore, the NDEP requires a program of overburden testing as specified in the Water Pollution Control Permit.

Z The locations of groundwater and vadose zone monitoring wells would be determined with NDEP during final design and review by NDEP of the Water Pollution Control Permit modification. Supplemental information pertaining to the heap leach pad leak detection system and monitoring is also presented in Chapter 3 of this FEIS, page 3-10.

AA Flows to springs in the Valmy Mine area would be maintained by installing diversion channels around facilities. While this is the primary mitigation measure to continue water delivery to the wetlands in the area, the Corps of Engineers may require additional mitigation measures.

BB 3, pg. 3-4, under "Affected Environment." Most of the baseline information and reference information is included in other sections of the document, but should be consolidated here. The FEIS should also clarify the designated air basin classification, anticipated project impacts to class I areas, and Prevention of Significant Deterioration (PSD) increments applicable to air quality in the project area.

ENVIRONMENTAL JUSTICE

CC The DEIS states that "...the Western Shoshone are concerned about the interrelatedness of impacts to water land and air, especially in light of similar impacts prompted by other projects in the region....[They] prefer that BLM address major issues and basic values." Executive Order (EO) 12898, Environmental Justice, states that each Federal Agency should analyze the environmental effects of its proposed actions on minority communities, through the NEPA process. The intent of EO 12898 is to promote nondiscrimination in federal programs substantially affecting the environment and to prevent disproportionately high and adverse environmental effects. In the FEIS, BLM should describe its Environmental Justice Strategy and assess whether the Proposed Action places a disproportionate burden on the Tribe and its ancestral home land.

DD The Western Shoshone have also expressed concerns about impacts to degraded plant communities, wildlife, water quality and burial grounds. NEPA requires that agencies identify methods to insure that presently unquantified environmental amenities and values may be given appropriate consideration [40 CFR 1507.2(b)]. It is apparent that the Tribe's concerns reflect the documented environmental degradation and potential impacts to the general environment from cumulative land use activities, including mining and exploration. In this light, we suggest that the Tribe's concerns, within the context of EO 12898, can and should be addressed through the NEPA process.

TOXIC RELEASE INVENTORY REPORTING

EE BLM and Newmont should note that on May 1, 1997, EPA added metal mining to the list of industries that will soon be subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and section 6607 of the Pollution Prevention Act of 1990 (See 40 CFR Part 372, *Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know; Final Rule,* Federal Register: May 1, 1997, pages 23833-23892). Reporting for mining facilities will be effective beginning with the 1998 reporting year. The first reports from all metal mining facilities must be submitted to EPA and the State by July 1, 1999. For specific information regarding the final rule, you may wish to call Mr. Tim Crawford, EPA Headquarters, at (202) 260-1715; e-mail: crawford.tim@epamail.epa.gov.

BB Several sentences and full paragraphs containing baseline information are moved from the Air Quality section of Chapter 4 to the Air Quality section of Chapter 3. The Air Quality sections have been modified and changes are reflected in Chapter 3 of this FEIS, pages 3-33 and 3-50.

CC A section for Environmental Justice has been added to the FEIS. Please refer to the first five paragraphs of the Environmental Justice section in Chapter 3, page 3-58.

DD A section for Environmental Justice has been added to the FEIS. Please refer to the Environmental Justice section in Chapter 3 starting after the fifth paragraph, page 3-58.

EE This comment has been noted.

Letter #16
COMMENTS

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April 11, 1998

Rodney Herrick, Project Manager
Bureau of Land Management
Winnemucca Field Office
5100 East Winnemucca Blvd.
Winnemucca, NV 89445

Re: Trenton Canyon DEIS

Dear Mr. Herrick:

Thank you for this opportunity to comment on this project. Because of the number of ongoing projects in Nevada, the lack of dewatering, and the fact that the area is already very heavily impacted by the industry, our comments will be limited.

The Trenton Canyon project, as proposed, would create or add to up to eight open pits on the west side of the Battle Mountain massif. It is an expansion of current projects at North Peak and Valmy Pit regions. It will disturb 1480 acres (page 2-14). With the low price of gold, we question why Newmont would propose to develop this resource at this time. Apparently, they have little hope that prices will increase substantially over the next few years.

Backfill

A The number of pits in this project and the possibility of sequential development means that this is an excellent project for pit backfill. The BLM could fulfill its responsibility to the public by not allowing eight large craters to form by requiring the backfill of at least some of these pits. There is consideration given to this idea, but there is far too much deference given to the mining company and economics of the issue.

Page 2-54 outlines a conceptual mine sequence to discuss how backfilling could occur. First, area A, at the far north end of the Trenton Canyon deposit is developed. Then, area E at the far south end is developed "because of higher gold content". Because E is too far from A, backfill is not feasible. There is reason given for mining A first. If E has the highest value ore, why not mine it first? Then, start with D, backfilling E as it goes. Then C is mined with backfill into B. etc.

RESPONSES

A BLM believes that the DEIS adequately analyzes the alternatives of backfilling the pits, which requires considering the Mining Act (1872), the surface management regulations and mandates under the Federal Lands Policy and Management Act (1976), the requirements of the National Environmental Policy Act (1969) and implementing regulations (CEQ 1972), and other laws, regulations, and executive orders.

Dewatering is not an issue at Trenton Canyon.

Letter #16 (Cont.)
COMMENTS

Mr. Rodney Herrick
Trenton Canyon Project

Page 2

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A But the mining company does not want to backfill a pit that may be mined deeper. Figure 2-15 suggests that pit B will be mined deeper as gold prices increase. There should be more explanation of this. As depth increases, the surface area increases and the amount of overburden removed increases. But the figure does not show much additional overburden removal going from $400 to $450 ore. A major cost limitation to depth is the need for dewatering. This is not an issue here, or is it?

If the BLM wants to protect the public's resources into the next century, it should be more specific about requiring backfill. There is no requirement in CFR Section 3809 that requirements be economical. The BLM does not need to maximize the industry's profits.

Heap Leach

B This project maximizes the possibility of cyanide spills by building and operating several heap leaches at the same time and designing event ponds for just the 25-year storm. We recommend that the BLM require the use of one heap leach facility with overflow and event ponds designed for the 100-year storm. We point out that BLM's proposed new regulations would require design for the 100-year storm.

This is important because spills would potentially reach Cottonwood or Trout Creek, depending on the facility considered. Because spills would occur during high flow periods, there is a substantial possibility of these spills reaching the Humboldt River.

Wildlife Habitat

C This project will destroy 1615.2 acres of Wyoming Big Sagebrush, 157.9 acres of Mountain Big Sagebrush and 16.5 acres of Black Sagebrush (page 4-50). These areas exceed those reported for surface disturbance discussed above and in chapter 2. Which is correct?

D The BLM minimizes the impacts on wildlife habitat. During project operations, impacts on big game are obvious; BLM does recognize that there will be habitat fragmentation, forage loss and barriers to movement. The suggestion that the existing riparian corridors would provide migration pathways ignores the fact of twenty-four operations and massively increased human activities. While mule deer may adapt to this activity, most large mammals, including mountain lion will shun the area.

E The discussion on page 4-50 about reclamation is rather vacuous. "Reclamation..., provided it maintains similar habitat features following disturbance, would enhance forage and maintain wildlife habitat value after completion of the mining operation" (page 4-50, emphasis added). Compared to what would there be an enhancement? Then the DEIS states that if reclamation is less successful, then there will be a decrease in mule deer population. The BLM

RESPONSES

B The leach facility and the process pond will be designed to meet or exceed engineering design requirements in NAC 445A (see Chapter 3 of this FEIS, page 3-13) and the Best Management Practices outlines in the Solid Minerals Reclamation Handbook (BLM Manual Handbook H-3042-1). In the event that new regulations are approved between the present time and final engineering design, the new standards of the new regulations would be enforced.

C Both sets of numbers are correct. The acreage estimates for vegetation disturbance are accurate within a 5% margin of measurement error as explained in footnote (b) of Table 4-9 in the DEIS. Total disturbed acreage in Table 4-9 is 2,109. Total disturbed acreage of the Trenton Canyon Project (No Action and Proposed Action combined) is 2,682. The difference of 473 acres is accounted for by disturbance caused by exploration roads and drill sites which is estimated at 456 acres in Table 2-2 of the DEIS. Because the disturbance due to exploration is reclaimed concurrently, it was excluded from analysis of the long-term impacts to vegetation caused by the other mine facilities.

D The DEIS identifies that there would be direct and indirect impacts to wildlife. Please refer to Section 4.10 Wildlife, Fisheries, and Special Status Animal Species beginning on page 4-48 for a complete explanation of the potential impacts. The riparian corridors have been movement corridors in the area for wildlife and are expected to be used by wildlife in this manner into the future. BLM recognizes that wildlife may, to some extent, avoid using these habitats and would be temporarily displaced because of mining or other human activity in the area.

Response to comment E is presented on the following page.

Letter #16 (Cont.)
COMMENTS

Mr. Rodney Herrick
Trenton Canyon Project

Page 3

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E seems to be saying that if reclamation works then wildlife habitat will be restored and if reclamation does not work, well then society will lose wildlife habitat. The BLM should assure that reclamation will work.

F The FEIS should note that the Fish and Wildlife Service has recently agreed that the goshawk qualifies for listing as a "threatened" species in the Western states. This project may soon impact the habitat of a threatened species.

G **Cumulative Impacts:** The assessment of cumulative impacts on wildlife is very disappointing. It is written in a tone to completely trivialize the amount of lost habitat. The loss of 14,119 acres (Table 4-11) is a lot of disturbance. Much of this area is actively mined twenty-four hours per day. The impacts extend far beyond the boundaries of actual surface disturbance. The associated roads and twenty-four traffic kills and scares away wildlife from many square miles of land. Lights all night upset the diurnal cycles of many species.

We call on the BLM to perform a cumulative impacts analysis of mining impacts on wildlife habitat in the entire Humboldt River basin. This analysis must include discussion of migration corridors, habitat fragmentation, and landscape connectivity.

Thank you for considering our comments.

Sincerely,

Tom Myers

Tom Myers, Ph.D.

RESPONSES

E Please refer to Chapter 3 of this FEIS (page 3-57) for modifications to paragraph 4 of DEIS page 4-50.

F This comment is noted.

G BLM believes that a cumulative impact assessment for the Humboldt basin is beyond the scope of the Trenton Canyon EIS. Cumulative effects to wildlife from the proposed mine expansion and from other planned projects would cause displacement and competition of displaced species with resident populations (e.g., larger mammal species). These effects were not considered to be of sufficient magnitude to cause any one species or populations of a species to be jeopardized. Both initial direct and indirect effects of the Trenton Canyon Project will be reduced by revegetation programs that establish forage for many mammal species (i.e., mule deer), as well as small mammals (rabbits, mice) in conjunction with mining operations that are conducted in adjacent areas.

COMMENTS

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

April 13, 1998

Regulatory Branch (199825037)(FEC)

Bureau of Land Management
ATTN: Rodney Herrick
Winnemucca Field Office
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445

Dear Mr. Herrick:

I am responding to your request for comments to the Draft Environmental Impact Statement (DEIS) for Newmom Gold Company's Trenton Canyon Project prepared by your office, (1793/3809 NV-020).

The Corps of Engineers jurisdiction within the project area is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into, and excavation within, waters of the United States. Waters of the United States include, but are not limited to, the following: perennial and intermittent streams, lakes, ponds, as well as wetlands in marshes, wet meadows, and seeps. Based on the preliminary report titled, *Wetland Delineation and other Waters of the United States Inventory*, Santa Fe pacific gold corporation Trenton Canyon Project, dated May 1996, the project area supports waters of the United States identified as wetlands and ephemeral channels. The Corps considers an ephemeral channel a jurisdictional water if the channel can show evidence that it supports enough flow to consistently maintain a bed and bank channel and are a part of the surface water tributary system.

While we have been unable to provide your agency in a detailed review, we offer the following comments:

General comments

A 1. This office has not verified the *Wetland Delineation and other Waters of the United States Inventory*, dated May 1996, for Trenton Canyon Project. Therefore, until we can complete this verification, acreage figures and lineal feet estimates mentioned in the DEIS should be considered preliminary and subject to revision. We will be conducting a field verification of the delineation as soon as we are able. However, based on our initial review of the document we do not expect significant revision to the delineation.

B 2. It is likely that the Trenton Canyon project can qualify for various Nationwide permits

RESPONSES

A BLM understands that the Corps of Engineers has completed a field verification of the delineation and revisions to Waters of the U.S. acreages have been incorporated in the FEIS. The Corps is still in the process of verifying the delineations in order to issue a 404 permit for the Trenton Canyon Project. BLM agrees that the findings of the wetland report are still preliminary until the Corps has reviewed the analysis for compliance with Section 404 (b)(1) guidelines.

Response to comment B is presented on the following page.

Letter #17 (Cont.)
COMMENTS

B including NW12 for Utility Crossings, NW14 for Minor Road Crossings, and NW26 for discharges above headwaters and within isolated waters, provided the project can meet the conditions of these permits, including Section 404(b)(1) guidelines discussed below. However, Nationwide permit NW26 will expire on December 13, 1998. Once NW26 expires, we do not anticipate being able to issue an extension of time for the Trenton Canyon Project to continue to complete permitted impacts under this authority. Until the Corps develops alternate permit procedures to continue authorization of NW26 projects, the Trenton Canyon Project can only be reauthorized by Individual permit after a 30-day public notice and comment period.

Prior to expiration of NW26, we expect to develop and implement other types of permit authorizations such as authorizations through Letter of Permission or some type of general permit specific to mining activities. We are currently advising permitees who will need extensions of time to their NW26 permit to delay preparation of an Individual permit application until 90 to 120 days prior to the expiration of their NW26. This would allow time for the Corps to develop alternate permit procedures, and would allow sufficient time for this office to process an Individual permit if their project cannot qualify for one of the new permits.

C 3. In reviewing the DEIS, we are reviewing the project proposal to determine if the project can meet the Clean Water Act 404(b)(1) guidelines described in 40 CFR 230.10(d). As you are aware, Section 404(b)(1) guidelines needs to be satisfied prior to issuance of Department of the Army permit for this project. Section 404(b)(1) guidelines require that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences. A permit cannot be issued in circumstances where a less environmentally damaging practicable alternative for the proposed discharge exists.

We require that measures be taken first to avoid, and second, to minimize effects of the discharge (fill and excavation activities) to waters of the United States. Every effort should be made to avoid project features which require the discharge of fill into waters of the United States which include not only wetlands, but also ephemeral channels. If it can be clearly demonstrated there are no practicable alternatives to filling or excavation of waters of the United States, a mitigation and monitoring plan will need to be developed to compensate for losses resulting from project implementation.

Specific Comments

D Page S-3, Use Cottonwood Creek as Overburden Disposal Area

The DEIS states, "*This alternative would have also required a Section 404 Permit..*

RESPONSES

B This comment is noted and Newmont will coordinate with the U.S. Army Corps of Engineers as appropriate.

C Based on the implementation of proposed monitoring and mitigation measures, the Proposed Action should not have adverse impacts to aquatic ecosystems.

D This change is reflected in the revised Summary of this FEIS, page S-3.

COMMENTS

3

D It appears that all alternatives including the no action alternative would require a Section 404 permit, likely various types of Nationwide permits. However, the impact of the Cottonwood Creek disposal proposal is more than minimal, and would not qualify for a nationwide permit. We recommend revising the sentence to read, "This alternative results in more than minimal impact and would have required a Section 404 Individual Permit....."

E Page 3-67, Section 3.9.2 Waters of the United States

The FEIS should identify 1.97 acres of ephemeral channels which will be impacted by the Proposed Action and Alternatives, and should also identify any existing impacts to Waters of the United States. We recommend including the preliminary map of delineation of waters of United States. Until we complete verification of the delineation, we will be unable to provide a final verified delineation map of the project site.

F Page 4-45, Section 4.9.1 Direct and Indirect Impacts

The FEIS should provide the delineation map showing potential waters of the United States with project features superimposed on this delineation. This would help to illustrate that wetlands will not be directly impacted, and make it easier to evaluate of indirect impacts to wetlands and direct impacts to the 1.97 acres of other waters of the United States.

G Page 4-45, Section 4.9.1.1 No Action Alternative

The FEIS should include the proposed impact to 0.14 acres to waters of the United States for the No Action Alternative within Table 2-7, Impact Summary and Comparison of Alternatives.

H Page 4-45, Section 4.9.1.2 Proposed Action

The DEIS discusses indirect impacts to wetlands which could potentially occur through mining activities by decreasing flows to wetlands and decrease in wetland quality and functional value through changes in water quality from sedimentation. The FEIS will need to identify specific avoidance, minimization, measures to protect these areas, and provide mitigation measures should impacts be unavoidable. Please refer to our discussion regarding 404(b)(1) guidelines and Potential Mitigation and Monitoring Measures.

Page 4-47, Section 4.9.2 Potential Mitigation and Monitoring Measures

The FEIS should be revised to describe avoidance, minimization, and mitigation measures

RESPONSES

E Please refer to Section 4.9.1.1, page 4-45 of the DEIS for a discussion of existing impacts to Waters of the United States. Section 4.9.1.2, pages 4-45 and 4-46, identify impacts to ephemeral channels as part of the Proposed Action. The Corps' field verification of the delineation determined an additional 0.11 acres of Waters of the U.S. exist in the project area. Of this additional acreage, 0.05 acres would be impacted by the Proposed Action, creating a total of 2.02 acres of impact to Waters of the U.S. New figures delineating Potential Waters of the U.S. and jurisdictional wetlands are added to the FEIS as Figures 3-15A and 3-15A1, page 3-39. BLM agrees that the findings of the wetland report are still preliminary until the Corps completes its review of the delineation analysis for accuracy.

F Delineation maps (Figures 3-15A and 3-15A1) are provided in Chapter 3, Modifications to the Draft EIS.

G This change has been addressed in Chapter 3, Modifications to the Draft EIS, page 3-20.

H Section 2.4.4, Drainage and Sediment Control, of the DEIS identifies diversion and soil erosion control measures to lessen potential indirect effects to wetland quality and functional value within the project area. BLM believes that the Proposed Action would have no significant impacts to aquatic ecosystems.

These mitigation measures are noted and will be considered in the final decision.

COMMENTS

H proposed with regard to wetlands, as well as to other waters of the United States for each alternative. The proposed mitigation and monitoring measures are not adequate for our review pursuant to Section 404(b)(1) guidelines.

Examples of efforts to avoid impacts to wetlands and ephemeral channels would include the elimination of various alternatives such as the Cottonwood Creek disposal alternative from consideration, realignment of roadways to limit the number of channel crossings, and modifications to the footprint of facilities to avoid wetlands and ephemeral drainages. Minimization efforts would include developing a wetlands habitat monitoring program to determine if ground and surface water quality and quantity is maintained in wetland sites, providing adequate buffer zone between mine facilities and wetlands and the channels which support wetlands, and implementing appropriate erosion and siltation controls during project construction activities. Mitigation measures for impacts that can be determined to be unavoidable, would include construction and monitoring of diversion channels to ensure the function of ephemeral channels to provide flows to downstream areas is maintained and implementing wetlands habitat mitigation if the function of wetlands are diminished.

I The DEIS states: "*...minor design changes would be implemented where possible to maintain existing drainage patterns and to minimize effect on the drainage into site wetlands.*" The Section 404 permit will require construction of diversion channels as mitigation for unavoidable direct impacts to any ephemeral channels which function to provide flows to downstream areas. Therefore, the FEIS should read ..."implemented where needed to maintain downstream flow....."

J "*No additional mitigation or monitoring measures would be required beyond those proposed in the Plan of Operations and Reclamation Plan.*" Although we have not received a permit application from Newmont Gold Company for the Trenton Canyon Project, additional minimization, mitigation and monitoring measures may be required in order for the project to satisfy Section 404(b)(1) guidelines and qualify for a Section 404 permit.

We appreciate this opportunity to be included in your review process. Should you have any questions, please write to our Nevada Field Office, C. Clifton Young Federal Building, 300 Booth Street, Room 2002, Reno, Nevada 89509, telephone (702) 784-5304, FAX (702) 784-5306.

Sincerely,

Nancy Kang
Nancy Kang
Biologist, Nevada Office

RESPONSES

I This change has been made in Chapter 3, Modifications to the Draft EIS, page 3-56.

J This sentence has been deleted. Please refer to Chapter 3, Modifications to the Draft EIS, page 3-56.

Copy furnished:

U.S. Fish and Wildlife Service, Reno Fish and Wildlife Office, 1340 Financial boulevard, Suite 234, Reno, Nevada 89502
Karl Kanbergs, U.S. Environmental Protection Agency, Region IX, Federal Activities Office, 75 Hawthorn Street, San Francisco, California 94105
George Conger, Newmont Gold Company, 1700 Lincoln Street, Denver, Colorado 80203

Letter #18
COMMENTS

From: Beth Cox <bethcox@usgs.gov>
To: ilmscc50.smtp ("ilmnvd20.rherrick@blm.gov")
Date: Mon, Apr 13, 1998 2:00 pm
Subject: USGS Comments for the DEIS for the Trenton Canyon Project

In Reply Refer To:
April 13, 1998
Mail Stop 423:

Memorandum

To: Rodney Herrick
Project Manager, Bureau of Land Management
From: James F. Devine
Senior Advisor for Science Applications
Subject: Review of the Draft Environmental Impact Statement for Newmont Gold Company's Trenton Canyon Project

As requested in your correspondence dated February 11, 1998, the U.S. Geological Survey (USGS) has reviewed the subject document and offers the following comments and suggestions:

A First and foremost, this draft environmental impact statement (EIS) is significantly lacking in raw data and descriptive information on methodology (models) to support the conclusions. In some instances, the raw data exist, but have not been included in the EIS. In other cases, no supporting data seem to exist. Methods used in the EIS need to be explained in detail so that comparisons of assumptions and the model itself may be performed. It is very important to include the data and methods in the text of the EIS. If the results provided in the environmental consequences section are found to be insupportable, the costs to the company that is paying to mitigate the impacts, as well as to the environment, could be large. The following comments include examples of deficient data. The list does not include all the areas that would benefit from more information, but provides examples and supportive reasoning for improvements throughout the EIS. Weak and missing methods are discussed, and suggestions offered for improving the whole EIS.

B **Section 2.4.7.2, p. 2-38, Table 2-5:**
There are four species proposed to be introduced into the area for reclamation (Crested wheatgrass, Intermediate wheatgrass, Ladak alfalfa, and Small burnet) that are not native there. Introduced alien species of plants used in reclamation projects are a major source of noxious plants that now invade natural and wilderness areas (including National Parks) and displace native species. Only six of the species referred to as 'native' on the list are actually native to this area. Seeds of native plants are available for this area. We strongly recommend that truly native species be used for any reclamation effort.

RESPONSES

A BLM did not include a methods section in preparing the DEIS resource chapters, rather, technical reports are referenced within the individual resource sections and are available for public review at the Winnemucca District and Nevada State Offices of the BLM.

B Introduced species are used primarily for the growth medium stockpiles, where the objective is to establish effective, but temporary cover. In other reclamation areas the introduced species would not be of a density that would inhibit the establishment and growth of native species. A proposed species mix was included in Table 2-5 of the DEIS and is also included as Appendix C of this FEIS. All seed used, including that for introduced species, would comply with BLM's 1745 Manual, the Federal Seed Act, and all applicable state seed laws.

	COMMENTS	RESPONSES
C	**Section 3.2, p. 3-10, Table 3-3:** Surface water standards are being used to assess water quality. In general, this is sufficient because surface water standards are more stringent than groundwater standards. However, this is not true for arsenic, for which the groundwater standards are more stringent (Table 3-3). Because it is especially important to monitor arsenic in all Nevada mining areas, we suggest that for this element, the groundwater standards be used to assess the impact of arsenic on water quality. Also, arsenic in water can be found in two oxidized states: arsenic(III), the reduced state and arsenic(V), the oxidized state. Table 3-3 only shows the surface water standards for arsenic(III). The toxicity of arsenic in the environment depends largely on the oxidation state, and because changing environmental conditions can affect the oxidation state of arsenic, we suggest monitoring both oxidized states. The EPA is considering tightening the arsenic standards because arsenic has such a serious affect on the environment.	C Table 3-3 of the DEIS shows that the most stringent standard for arsenic (0.05 mg/l) is the same for drinking water from either groundwater or surface water sources. See Appendix E of the FEIS for a baseline water quality data summary. Page 1 of this table shows that baseline arsenic values for surface and groundwater were compared with the 0.05 mg/l standard to establish exceedances. The discussion suggests that both oxidation states of arsenic (As) should be monitored for surface and groundwater. The drinking water standard (0.05 mg/l) is for total As and was used to assess impacts in Appendix A of the DEIS and Appendix E, Table 4-2 of the FEIS. As arsenic in the deposit will be in the form of scorodite and other iron arsenates (i.e., As(V)) due to the oxidizing conditions in the weathered cap of the deposits, it is expected that arsenic in groundwater will also be in the oxidized (less toxic) form (As(V)). Redox potential of groundwater will not be sufficient to reduce As(V) to As(III) prior to the water reaching the surface. Since As(III) is not expected to be present, the total arsenic criterion is appropriate.
D	There is no surface water standard shown for sulfates on Table 3.3. We suggest that sulfates be monitored even without a standard in order to assure no increase of this element in the environment. A baseline sulfate value needs to be established at all monitoring sites before mining begins. In Table A-8, the prediction of high sulfates for CCS-4A should be supported by the raw analytical data.	D The surface water standard (municipal or domestic supply) for sulfate from Table 3-3 of the DEIS is 250 (500) mg/l. Please refer to the response to comment N from the EPA (letter 15, page 4-35) which addresses sulfate exceedances at Station CCS-4A. Baseline values for sulfate have been established (see Appendix E, Table 4-2 of this FEIS).
E	Because cyanide is being introduced into the environment, a thorough monitoring of nitrates (a potential result of cyanide decomposition) should be performed. The actual baseline amount of nitrates in the water should be monitored at all sites, to provide a basis to evaluate any negative impacts from future introductions of cyanide. If there is a spill, the nitrate concentration could be a big problem. Baseline values for nitrate and all other measured elements and constituents should be reported in the EIS.	E Cyanide is not being introduced into the Cottonwood Creek drainage. Table 3-4 of the DEIS provides a summary of the baseline parameter results versus water quality standard thresholds. Baseline analyses for nitrate are shown in Appendix E, Table 4-2 of the FEIS. Water quality monitoring data would be required as part of the NDEP Water Pollution Control Permit.
F	**Table 3-4, p. 3-11:** Arsenic is not shown except as a footnote. Again, raw analytical data is needed here for this element and other elements and constituents such as nitrates, sulfates, and cyanide (see comment below). A complete table of raw analytical data is needed in addition to Table 3-4, as is information on sampling methods and laboratory procedures. How was the sampling done? How were the samples stored and preserved for the various tests conducted? How long between sample collections and analyses? Where were the samples analyzed? What laboratory procedures were used on the samples? How was the arsenic(III) separated from the arsenic (V), and were both oxidation states measured? This information is needed to evaluate the quality of the analytical data, which can be used to establish baseline information, develop and evaluate future company mitigation efforts. Include this information in the consultant's reports to the mining company, and publish it with the EIS to support or challenge the conclusions made by the mining company and their consulting firms.	F Please refer to Appendix E of this FEIS for the analytical data used to support the conclusions on Table 3-4. BLM did not include a methods section in preparing the DEIS resource chapters. Baseline analyses for groundwater are adequately summarized in Appendix E, Table 4-2 of the FEIS. Geochemistry data is adequately summarized in the DEIS. The raw data is in Shepherd Miller's 1996 Baseline Hydrology and Geochemistry Report. This report is available for public review at the Winnemucca District and Nevada State Offices of the BLM.

Page 2

COMMENTS

F

Section 3.3, p. 3-13:
Although surface water and standards were used for the water quality evaluation, the baseline groundwater signature should also be included in the EIS. The collection wells are well-placed for monitoring (as are the surface water sites). These raw data with sampling and analysis information need to be published in the EIS.

Section 3.5.8, p. 3-37:
The raw data used in the models should be included.

G

Table A-8, p. A-18:
There is no mention of nitrates in the prediction of impacts on Cottonwood Creek. Nitrates need to be monitored at these surface water sites, as well as the wells and springs, for possible contamination with cyanide degradation products.

H

Section 3.6.1.4, p. 3-43:
There is no mention of the fraction of time the wind exceeds threshold for dust emission. The dust emission threshold for a given soil type associated with a given soil map unit would depend on mass mode diameter. The mass mode diameter is estimated from the size distribution of the soil by determining the range of diameters that contains the most mass and by taking the average diameter of that range.

I

Section 3.6.1.4, p. 3-43:
The climate monitoring at the mine site does not relate the 1995-96 precipitation to the long-term average leaving the reader without any way to know if the 1995-96 precipitation is above or below the average.

J

Also, the average, maximum, and minimum wind speed data and prevailing wind direction are not the correct values needed to evaluate the air pollution consequences from mining activity (see above). Are there any major storms with winds from the North? What percent of the time is the wind above threshold and what is the associated wind direction? What are the wind speeds and directions of dust storms? What is the yearly frequency of dust storms?

K

Section 3.6.2.1, p. 3-44:
The danger of temperature inversions is that trapped air pollutants will be a major hazard to workers near or on the site. The danger of dust storms is that the wind-born dust will be a hazard to workers on and downwind to the site. The distance the plume will go downwind and how dangerous it will be depends on the size distribution and concentration of the suspended components. These issues are related to section 3.7 below.

L

Section 3.7.3, p. 3-44:
An explanation of how K, the soil erodibility factor, is related to the mass mode diameter of the soils, and how C, the climatic factor, is related to the wind speed (percent of time the wind is above

RESPONSES

G There are no cyanide facilities in the Cottonwood Creek drainage. DEIS Table A-8 only refers to predicted water quality impacts from overburden disposal areas in the Trenton Canyon deposit.

H Dust emissions were estimated using methods from EPA's AP-42 and information provided by mining industry sources (see following response to comment P of this letter). These methods did not require determination of a threshold wind speed and related information.

I A comparison of 1995 and 1996 precipitation at the Battle Mountain station with the 30-year mean from that station was made and included in revised Section 3.6.1.3 (Chapter 3 of this FEIS, page 3-34).

J The average wind speed was used according to methods presented in EPA's AP-42 to estimate dust emissions from unloading ore and overburden. The impacts of dust emissions were examined in revised Section 4.6.1.2 (Chapter 3 of this FEIS, page 3-52). The evaluation method did not require the more detailed information requested, i.e., threshold wind and dust storm information (see the following response to comment P of this letter).

K This comment has been noted.

L The Soil Survey Baseline Report (RCI, 1995) formed the basis for the soil classification and erosion estimates presented in the DEIS. The methodology used in this survey is outlined as follows:

- Existing information (primarily Order III reconnaissance level NRCS soil surveys) was reviewed;
- An Order II refinement of the NRCS survey was conducted with more precise mapping of NRCS soil units and development of new soil units, as necessary. This effort included:
  - field mapping and survey of surface and subsurface features;
  - completion of standard (SCS Form 232) survey forms;
  - classification of soils per nationwide uniform procedures;
  - delineation of soil unit boundaries on aerial photographs; and
  - import of soil unit mapping into the project GIS database.

Response to comment L is continued on the following page.

COMMENTS

L each soil threshold) is needed. The reference to T is not clear and an explanation of how T relates to the previous parameters K and C is needed. The reference, Schwab, G.O., 1981, does not include newer methods that relate erosion to soil properties and wind parameters. It would also be useful to have the size and distribution data of the soils to determine just how the K parameter was calculated and to compare the results to more recent methods relating wind speed to evaluation of dust emission rates. There is no calibration of the K, C, T model. Has it been applied to real world soils and compared to actual dust emission rates? Newer models have been calibrated for dust emission against actual measurements in the field and in laboratory wind tunnels.

M **Section 3.10.2.3 (p. 3-75, Macro invertebrates and Insects):**
There seems to be no program to monitor benthic invertebrate populations through the life of the project. Information from such monitoring (especially in Cottonwood Creek) would provide a basis to judge the effects on water quality and allow additional BMPs or the strengthening of those already in place.

N Figure 3.14 (p. 3-52, Wind Erosion) is insufficient to evaluate the wind erosion potential of the soils at the site. The wind erosion has been evaluated on in-situ soils, whereas some of the clay and fine sandy loam soils (Table 3-11, p. 3-46) are quite stable in-situ, but have significantly different and potentially disastrous properties when driven over by trucks, or disturbed in other ways. These soils should be evaluated for their disturbed properties by using the newer models rather than their undisturbed states. For this reason, the soil erosion characteristics (Table 3-12) incorrectly evaluate the wind erosion hazard. Also, as previously discussed, there is no calibration on the results shown in Table 3-12, p. 3-53.

O **Section 3.14, p. 3-91:**
This section needs to include mechanical and wind induced dust emissions into the visual quality of the region in general and specifically as seen by auto traffic to the west and north. The impact of dust emissions on visibility has become a major factor in environmental quality in the West.

P **Section 4.6, p.4-30:**
Valmy is only 13 miles to the north. A 30-mile-per-hour wind could be there in 25 minutes carrying a lot of dust. The actual micrograms per cubic meter of suspended dust that may reach any point downwind depends very much on the emission and transport model. These models have not been defined, and therefore, no real understanding of the spatial and temporal distribution of dust concentration is available. No assessments can be made as to the total impact of dust emission from the mine. The results are shown in Table 4-7 (p. 4-33) and the attendant discussion appears to be derived from EPA document AP-42. This is not enough information to judge their model or the input parameters and extracted results. The favorable NAAQS comparison on p.4-34 is based on an assumption that cannot be evaluated. The statement that "only a portion of the fugitive particulate (30 microns or less fraction)" may influence the ambient air quality of the town of Valmy, is misleading. If Valmy is near the plume center, the effect could be substantial because as was stated in this EIS, the 30-micron and less material remains suspended for a long time. We suggest that you define the dust model and the input parameters used. The present dust monitoring system needs to

RESPONSES

L (Continued)

The soil erodibility (factor K) and the soil loss tolerance factor (factor T) for the soil units presented in Table 3-12 of the DEIS are consistent (and generally match exactly) with the factors for the soil units with the same names presented in the NRCS county soil survey.

The factors chosen for the new soil units were derived from the field survey data (which include rough estimates of percentages in gravel, sand, silt, and clay for each soil unit). The field survey data are presented in Appendix A of the Soil Baseline Report (RCI 1995).

The commentor assumes that detailed calculations were performed to estimate the K and T factors, and to assign surface water and wind erodibility risk. These calculations were not deemed necessary for this level of study. The risks portrayed in DEIS Figures 3-13 (water erosion) and 3-14 (wind erosion) derive directly from the soil unit mapping and the wind and water erodibility factors assigned to each soil unit.

M This comment has been noted and will be considered in the final decision.

N The commentor assumes that detailed calculations are required to estimate erodibility risk. These calculations were not deemed necessary for this level of study. The risks portrayed in Figure 3-14 (wind erosion) of the DEIS derive directly from the soil unit mapping and the wind erosion index assigned to each soil unit.

O This comment is noted and is addressed in Chapter 3, of the FEIS, page 3-57. The following sentence will be added to Section 4.14.1.2, page 4-62 of the DEIS: "Occasionally, visual quality in the project area may be affected due to dust emissions." Specific dust control measures to reduce visual quality impacts would include watering or chemically stabilizing unpaved haul roads, access roads and ore stockpiles.

P Air quality impacts were examined using the following procedure: the annual emissions from each alternative were estimated, the magnitude of the emissions were compared with the Lone Tree Mine emissions, and the air quality impacts were evaluated using the Lone Tree Mine air dispersion modeling results based upon the emissions comparison.

Response to comment P continued on next page.

COMMENTS

RESPONSES

(Continued)

P Emissions for the Proposed Action were determined using methods from EPA's AP-42 and information provided by mining industry sources. The emissions increase due to the Proposed Action were determined as the difference between the emissions from the current approved operation and the proposed operation. Spreadsheet calculations for the current approved operation and the proposed operation are shown in Appendix D of this FEIS. A summary of the emissions increase can also be found in Appendix D. The summary values were used to produce the values shown in DEIS Table 4-7 (reprinted in Chapter 3 of this FEIS).

Air dispersion modeling was performed as part of the air quality permitting process for the Lone Tree Mine. The results of the air dispersion modeling indicate that the PM_{10} emissions from activities at the Lone Tree Mine would not violate the NAAQS. It can reasonably be concluded that the much lower PM_{0} emissions from the Proposed Action would also not violate the NAAQS.

Dust monitoring was performed from 1994-96 at three locations at the Lone Tree Mine, located 12 miles north of the Trenton Canyon project area.

COMMENTS

P be shown on a map and the monitoring procedures explained.

Q For the stated prevailing wind direction (southwest), the town of Battle Mountain could be affected by PM (10) emissions. With one wilderness area to the north (Little Humboldt River) and two in Buffalo Valley, an area stated as having possible negative air quality effects (p. 3-44), the fine dust particulate with metal and other hazardous material components should always be contained using proven dust abatement procedures.

R **Section 4.6.1, p. 4-31:**
What is the frequency of watering for dust abatement? Will all disturbed surfaces be watered such that no dust is emitted or just roads and stockpiles? What is the chemical stabilization agent used for abatement and what new ingredients will it add to the environment (and air quality)?

S **Section 4.6.1.1 (p. 4-32) and Section 4.6.1.2 (p. 4-34):**
It is unclear if the numbers cited for annual PM (10) dust emissions and 24-hour dust emissions include the cumulative amounts of dust from all the disturbances in the area. Where are the dust monitoring site(s)? Is there more than one site and how are they distributed?

T **Section 4 6.1.2, p. 4-33:**
How are the leach heaps stabilized for dust?

U **Section 4.18.5, p. 4-90:**
This section seems to be a weak summary of effects that have not been properly qualified. It would be useful for Trenton Mining Group and/or the BLM to make available the data and methods that they used to calculate their dust emissions.

V Although not essential to the technical validity of the document, you may want to note that Henry Comstock was not really the one who discovered the lode. According to (Smith, Grant H., 1943, The History of the Comstock Lode, 1850 - 1920, University of Nevada Bulletin, Vol. 37, No. 3, P. 7), the north end of the lode was discovered by Peter O'Riley and Patrick McLaughlin, and the south end by James "Old Virginny" Fenney and others. Comstock actually connived his way into 1/4 interest for himself. He then bragged about "his discovery" until his name was associated with the lode.

Copy to: Director, OEPC
Nevada State Director, Bureau of Land Management
USGS State Representative, WRD, NV

CC: "Jon 0 Nowlin, District Chief, NV, Carson City, NV

RESPONSES

Q Little Humboldt River, Tobin Range, and China Mountain are not wilderness areas, they are classified as Wilderness Study Areas (WSAs) which have no special air designation. The DEIS provides that dust would be contained with proven dust abatement procedures.

R Emissions would be adequately controlled which would depend on weather conditions at the time of disturbance. During dry periods, frequent watering would occur at active roads and stockpiles, typically several times per day. An established dust suppression method has not been identified, however, magnesium chloride and other standard industry stabilizing agents would be occasionally used for dust abatement and would not pose significant threats to the environment.

S The emissions cited in Section 4.6 are based on the Proposed Action. Cumulative effects for air quality emissions are presented in revised Section 4.18.5, Chapter 3 of this FEIS, page 3-70. The emission figures on page 4-93 should be corrected to match the numbers on revised Table 4-13, see Chapter 3 of the FEIS, page 3-71. There is one monitoring site located at the Lone Tree Mine.

T Heap leach facilities are stabilized with process solutions through drip emitters or sprinklers.

U Please refer to response P of this letter.

V No response necessary.

Rayrock

RECEIVED
APR 1 · 1998
DIST. WINNEM. NEVADA

April 14, 1998

Mr. Rodney Herrick, Project Manager
Trenton Canyon Project EIS
Bureau of Land Management
Winnemucca District Office
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445

RE: Comments on the Trenton Canyon Project Draft Environmental Impact Statement (DEIS) - (1793/3809 NV-020)

Dear Mr. Herrick:

Rayrock Mines, Inc., d.b.a., Marigold Mining Company, is the agent for Roby Exploration Company and also the operating partner of the Marigold Mine. Roby is the claim and lease holder on Marigold's land position. Our Marigold Mine is located between Newmont's Lone Tree and Trenton Canyon mines. As such, the Trenton Canyon DEIS is of definite interest to our company.

Marigold wishes to congratulate and welcome additional mining development in the area. Newmont is a leader in the mining industry, with a strong and responsible history. Continued development of the Trenton Canyon Project is an outgrowth of their success. In addition, Marigold has had excellent relations with Newmont, as reflected in our joint water supply agreement and bat habitat mitigation proposals.

As such, our comments are not meant to negatively reflect upon Newmont, but rather to help assure that the Bureau of Land Management (BLM) develop accurate, technically feasible and focused (scoped) EIS's. The following comments reflect our review of the DEIS:

A

1) The DEIS presents several maps that appear to depict Newmont control of mining claims on public sections, all private lands, Section 19 (leased from the University of Nevada [UNR]), and Sections 9 & 17 (owned outright), within Marigold's property boundary (Figures 2-1, 2-3, 2-4, 2-7, 2-8, 3-2, 3-12, 3-13, 3-14, 3-15, 3-30, 3-23, & 4-2). Admittedly, several of these figures are "resource inventory" related, but Figures 2-1, 2-3, 2-4, and 3-20 are specifically related to land status and proposed operations.

Marigold granted specific right-of-ways for the Lone Tree - Trenton Canyon haul road, water line and other utilities/roads in 1996, but did not relinquish any other property rights. As such, the maps depicting land status should be changed. We have been in contact with Lone Tree's General Manager, Mr. Ali Soltani, and wish to formally thank him for his prompt forthright response.

Rayrock Mines, Inc.
Post Office Box 160 / Valmy, Nevada 89438 / Tel. (702) 623-0818 / FAX (702) 623-0826 / (800) 246-6096

A Land status (Figures 2-1, 2-3 and 3-20 of the DEIS) has been corrected to show public versus private parcels (please refer to revised figures in the FEIS). Any references to mineral control or ownership have been eliminated.

Letter #19 (Cont.)
COMMENTS

A

2) The DEIS also depicts a haul road and access across public Section 20 (T.33N., R.43E.). Marigold has valid mining claims in this section, in which we are engaged in active mineral exploration. No formal right-of-way has been granted to Newmont for access (across Section 20) to their proposed heap leach facilities in Section 21. Again, while Marigold granted right-of-ways to Santa Fe (Newmont) in 1996 for access across corners of public Sections 30 and 36, as well as private Section 31, an agreement has not been entered for Section 20. Rayrock is currently in the process of negotiating a Section 20 right-of-way agreement with Newmont, and we fully expect an amicable resolution.

B

3) The Cumulative Effects section, beginning on page 4-84, contains information relating the Marigold Mine on Table 4-11. This table is not consistent with the requested information sent to the BLM's third party contractor on November 27, 1997. Information supplied at that time included: 1) 1,344 acres - Existing, 2) 882 acres - Proposed and 3) 1,356 acres - Reasonably Foreseeable. Marigold does not understand why the DEIS does not reflect our estimates.

C

4) In Appendix A, Section 1.0, a summary of the testing data for acid generation potential of waste material and pit walls from each proposed pit is presented. The data (from static tests) indicate that the potential for metal leaching due acidic conditions from the areas and sources is "...extemely low...". However, additional analysis was conducted requiring humidity cell testing, even though the static testing was well below acceptable ranges. As such, the additional humidity cell tests were probably not necessary to determine potential acid generation impacts.

5) Also in Appendix A, Section 2.0, metal concentrations in overburden material leachate and pit wall runoff were analyzed. This analysis is relatively new for those open pits that do not intercept groundwater, and in our view unnecessary. The DEIS even admits that "...no suitable models are available for these predictions."

The BLM's charge in the National Environmental Policy Act (NEPA) process is to apply "sound science", not invent it. A reasonable person could conclude from the previous section (1.0) that little metal mobilization would occur to any extent measurable, precluding the need for additional analysis. The BLM should develop issue-specific rationale identifying each significant need before requiring additional analysis.

D

6) Finally, Marigold remains puzzled regarding overall project communications. On June 5, 1996, Rayrock and Santa Fe representatives met with the BLM to discuss NEPA planning surrounding the Trenton Canyon Project and future expansion plans at Marigold. It was agreed at that time that the BLM would continue to communicate pertinent information to all parties. Certainly, most of the misunderstandings discussed in #1, #2 & #3, above, could have easily been resolved by better communications. In the future, we ask that the BLM communicate better, and inform surrounding land owners of pertinent issues.

7) All BLM EIS's should narrow the NEPA analysis focus to issues and alternatives which meet the Council on Environmental Quality's regulatory definition of "significance". The purpose for centering on significant issues, other than the statutory and regulatory requirement, is to prevent

Page 2 of 2

RESPONSES

B This comment has been noted, and a revised Table 4-11 is presented in Chapter 3, Modifications to the Draft EIS, page 3-68.

C Minimizing potential impacts to surface and groundwater is a high priority for the Trenton Canyon Project as many of the mining operations are located near water resources. Additional analysis was deemed necessary to ensure adequate assessment of potential water quality impacts from acid generation potential, material leachate, weathering, and seepage.

D BLM facilitated a Trenton Canyon Project meeting on June 5, 1996, between Santa Fe Pacific Gold and Marigold which included a briefing on the Trenton Canyon Project and stressed coordination between the two companies. A Trenton Canyon briefing between BLM and Marigold was held on May 24, 1996. Issues that surfaced in these meetings included overlap of the project boundaries between the companies.

D an "encyclopedic" analysis of every issue. In our view, at least two issues (#4 & #5) appear to more than exceed the requisite NEPA analysis.

In closing, we reemphasize our support of Newmont's Trenton Canyon Project expansion, while encouraging the BLM to enhance project communications, and limit NEPA testing and analysis to significant issues.

Respectfully submitted,

Jerald N. Hepworth
Jerald N. Hepworth
Director EHS

xc: K. Belingheri, B. Bryson - Rayrock
T. Fagg, H. Reed - Marigold
A. Soltani, P. Rogers - Newmont Lone Tree

United States Department of the Interior 22 [illegible] 12:12

FISH AND WILDLIFE SERVICE
RENO FISH AND WILDLIFE OFFICE
1340 FINANCIAL BLVD., SUITE 234
RENO, NEVADA 89502

April 14, 1998
File No. BLM 10-4

Memorandum

To: District Manager, Winnemucca Field Office, Bureau of Land Management, Winnemucca, Nevada (Attn. Rodney Herrick)

From: Field Supervisor, Reno Fish and Wildlife Office, Reno, Nevada

Subject: Trenton Canyon Project Draft Environmental Impact Statement

The Fish and Wildlife Service has reviewed the January 1998 Draft Environmental Impact Statement (DEIS) for Newmont Gold Company's Trenton Canyon Project. Newmont Gold Company proposes to construct and expand existing gold mining operations within Humboldt and Lander Counties, Nevada. The project would include expansion and/or modification of the Valmy pit, the North Peak pit, two overburden disposal areas, the heap leach facility, the access road, and other support facilities. The new facilities would include an open pit at the Trenton Canyon deposit, 11 overburden disposal areas, two heap leach facilities, and other support facilities. Approximately 1,480 acres would be disturbed by mine expansion and new facilities construction, as proposed. The following comments are provided for your consideration in preparing a Final Environmental Impact Statement (FEIS).

GENERAL COMMENTS

A The Service supports the Partial Sequential Backfill Alternative to potentially reduce both the total area of mine disturbance, as well as sedimentation to Cottonwood Creek.

We appreciate the efforts made by the BLM in producing the Trenton Canyon Project DEIS. The Summary section was thorough, well written, and helpful in determining major aspects of the proposed action.

B The Service is concerned that pits, intercepting perched water zones, may impact discharge in springs and seeps. These water sources should be monitored to determine if impacts are

A This comment is noted and will be considered in the final decision.

B Please refer to Response H of this letter.

COMMENTS	RESPONSES
District Manager File No. BLM 10-4	
B occurring from mining. Mitigation measures should be in place in the event negative impacts are observed. We recommend full compensation for any losses to wetlands.	
SPECIFIC COMMENTS	
SUMMARY	
C Affected Environment, Wildlife, Fisheries, and Special Status Animal Species, page S-8: In the last paragraph, the term "sensitive" should be replaced by "species of concern" in the sentence beginning with "Eight mammals...."	C This change has been addressed in the revised Summary of this FEIS, page S-7.
3.0 AFFECTED ENVIRONMENT	
D 3.2. SURFACE WATER, 3.2.1 Surface Water Quality, page 3-2: It is stated that three perennial streams are present within the Trenton Canyon Project hydrology study area. However, after reviewing the sections on the drainages of Cottonwood, Trout, and Trenton Creeks, we noted that some reaches of the three streams are intermittent within the study area. It might be more accurate to state that stream reaches are both perennial and intermittent within the study area.	D This change has been addressed in Chapter 3, Modifications to the Draft EIS, page 3-21.
E 3.3 GROUNDWATER & 3.9 WETLANDS AND RIPARIAN HABITAT, pages 3-21,65: The DEIS states that the pits would not intercept the regional groundwater system but could intercept perched water zones. The FEIS should identify the water source of the springs and seeps in the proximity of the three pit areas, and indicate the extent to which it could be affected by the pits.	E No springs have been reported in the North Peak area. For the Valmy Deposit, please refer to the response to Comment L from the Western Shoshone Defense Project, page 4-69. For the Trenton Canyon Area, please refer to the response to Comment K from the Western Shoshone Defense Project, letter 21, pages 4-68 and 4-69.
F The DEIS also states that there are a number of springs and seeps present where surface water is sufficient to develop wetlands conditions. The FEIS should discuss whether these wetlands are fed by the same perched water zones which may be intercepted by the pits.	F Please refer to the response to Comment K and L from the Western Shoshone Defense Project, pages 4-68 and 4-69.
G 3.10 WILDLIFE, FISHERIES, AND SPECIAL STATUS ANIMAL SPECIES, 3.10.3 Threatened, Endangered, or Sensitive Animal Species, page 3-76: In the last paragraph, the term "sensitive" should be replaced by "species of concern" in the sentence beginning with "Eight mammals...."	G This change has been addressed in Chapter 3, Modifications to the Draft EIS, page 3-38.
4.0 ENVIRONMENTAL CONSEQUENCES	
H 4.3 GROUNDWATER & 4.10 WILDLIFE, FISHERIES, AND SPECIAL STATUS ANIMAL SPECIES, pages 4-20,51: The final EIS should discuss the impacts, direct and indirect, of perched water draining into the 3 pit areas instead of being naturally expressed through local springs and seeps. This analysis should include impacts to springs and seeps under wet and dry conditions.	H BLM does not expect any direct or indirect impacts to wildlife, fisheries, or threatened or endangered species from potential draining of perched water zones into the proposed pits. **North Peak Deposit** - No springs or seeps occur in the vicinity of the North Peak Deposit. **Valmy Deposit** - Refer to response Comment L from the Western Shoshone Defense Project. **Trenton Canyon Deposit** - Refer to response to Comment K from the Western Shoshone Defense Project.

Letter #20 (Cont.)
COMMENTS

District Manager File No. BLM 10-4

H Section, 3.0 Affected Environment, 3.10.2.1 Aquatic Habitat, states springs are an important source of water for wildlife in a relatively dry area. The FEIS should analyze the impacts of pits intercepting perched water zones on aquatic and riparian habitats associated with area springs and seeps.

I 4.7 SOILS, 4.7.1.2 Proposed Action, page 4-37: The summary, Soils page S-13, states that the amount of available soil salvaged from the disturbed areas would be less than necessary to achieve the desired cover depth of 12 inches. The quantity needed to reach the desired soil depth would be 1.0 million cubic yards. The final EIS should state the source and quality of this soil used to meet reclamation goals.

J 4.10 WILDLIFE, FISHERIES, AND SPECIAL STATUS ANIMAL SPECIES, 4.10.1.2 Proposed Action, page 4-52: In the first sentence, the wording "listed as federal candidate" should be omitted from "species of concern listed as federal candidate".

K 4.18 CUMULATIVE EFFECTS, Wetlands and Riparian Habitats, page 4-94: The DEIS states that wildlife diversity and/or abundance for migration could improve if the wetland is dried up and becomes a seasonal mud flat. The Service does not wholly agree with this statement. Seasonal diversity and abundance of migrating shorebirds may increase, but overall wildlife use may decrease. It is likely that species that historically have used the wetlands would be negatively impacted by the change from wetlands to a seasonal mudflat.

We appreciate the opportunity to provide comments on this project. If you have any questions, please contact James Harvey or Mary Jo Elpers at (702) 861-6300.

Sincerely,

for Robert D. Williams
Field Supervisor

cc:
State Director, Bureau of Land Management, Reno, Nevada
Administrator, Nevada Division of Wildlife, Reno, Nevada
Regional Manager, Nevada Division of Wildlife, Fallon, Nevada
Administrator, Nevada Division of Environmental Protection, Carson City, Nevada

3

RESPONSES

I All available (recoverable) surface growth medium material (topsoil) would be removed during construction, stockpiled, and returned to the reclaimed areas prior to seeding. Demonstration plots in the form of concurrent reclamation would be used to determine appropriate quantities of topsoil required to achieve BLM's Interim Standards for Reclamation. Should there be a shortfall in topsoil, then soil amendments and/or alternate growth medium material would be utilized. The demonstration plots would identify optimum reclamation procedures.

J This change has been addressed in Chapter 3, Modifications to the Draft EIS, page 3-57.

K This sentence has been deleted, and a revised Section 4.18.8 is presented in Chapter 3, Modifications to the Draft EIS, page 3-72.

District Manager File No. BLM 10-4

Chief, Office of Federal Activities, Environmental Protection Agency, San Francisco, California
Assistant Regional Director, Klamath and California Ecoregion, Fish and Wildlife Service, Portland, Oregon
Assistant Regional Director, Interior Basin Ecoregion, Fish and Wildlife Service, Portland, Oregon

Letter #21
COMMENTS

WESTERN SHOSHONE DEFENSE PROJECT
PO Box 211106 Crescent Valley, Nevada 89821 ph: 702-468-0230 fax: 702-468-0237 email: wsdp@igc.org

April 14th, 1998

Rodney Herrick, EIS Project Manager
Bureau of Land Management, Winnemucca District Office
5100 East Winnemucca Blvd.
Winnemucca, Nevada 89445

Re: Extension for comments on Trenton Canyon DEIS

Dear Mr. Herrick,

On behalf of the Western Shoshone Defense Project (WSDP), an organization committed to the preservation of Western Shoshone rights and lands in the Great Basin, I am submitting this request for a time extension to submit written comments on the Trenton Canyon Project DEIS. The WSDP has been an active participant in the several Native American site visits conducted prior to the preparation of the DEIS. We continue to have concerns with both the design and impacts of this project on Western Shoshone rights and lands. Because of an overwhelming work load associated with participation in other BLM/Western Shoshone land issues, we have not yet been able to complete comments on this DEIS. We are requesting a three day extension to submit written comments to your office. The original deadline was Tuesday April 14th, 1998. We would like to submit written comments to you postmarked no later than Friday, April 17th, 1998.

The WSDP is an organization committed to supporting the preservation of Western Shoshone rights and lands throughout the Great Basin. We produce and distribute a newsletter to a support network of over 3,000 individuals and organizations, locally, regionally, nationally, and internationally. Public education concerning Western Shoshone issues is accomplished both through the newsletter and the participation of the Project in various conferences, hearings, and other speaking engagements across the West. Much of our work involves the research and analysis of projects occurring on Western Shoshone lands, often under the auspices of the BLM. The WSDP has been a active participant in the NEPA process involving many different mineral projects on Western Shoshone territory. This time extension requested would facilitate our participation in the ongoing public involvement and evaluation of the Trenton Canyon Project.

Thank you for your time and we hope you will see fit to grant this extension for written comment.

Sincerely,

Christopher L Sewall

Christopher Sewall
staff person, WSDP

RESPONSES

Comments Submitted by:

Western Shoshone Defense Project
P.O. Box 211106
Crescent Valley, Nevada 89821

Western Shoshone Resources Inc.
P.O. Box 21479
Reno, Nevada 89515-1479

Comments on the Trenton Canyon Project Draft EIS

These comments are being submitted by both the Western Shoshone Defense Project and Western Shoshone Resources Inc.. Our organizations share a cooperative history and are committed to the preservation of Western Shoshone rights and lands. The Trenton Canyon Project is located within the boundaries of the Western Shoshone Nation and will significantly impact the resources of the Western Shoshone.

General Comments:

A The following pages represent our comments concerning the Trenton Canyon Project Draft Environmental Impact Statement. Our evaluation of this document has lead us to the conclusion that the said document is inadequate in the analysis of the potential impacts of this project. As such it does not provide the public with adequate information to judge the impacts of this project. Our recommendation is that this document be redone with additional information to address the issues and concerns expressed in these comments. Based upon the information in our possession, the Trenton Canyon Mine would create unacceptable environmental and cultural impacts on the Western Shoshone Nation. We oppose the construction of this project as it is now proposed.

The Treaty of Ruby Valley and Western Shoshone Sovereignty Issues

B Despite a brief mention that Western Shoshone expressed the continuing existence of Western Shoshone land rights as recognized in the 1863 Treaty of Ruby Valley, no further discussion of this fact appears in the DEIS. The U.S. Constitution says that treaties are the supreme law of the land, not the 1872 Mining Law or the other federal regulations to which the DEIS makes reference. The 1863 Treaty of Ruby Valley between the U.S. and the sovereign Western Shoshone Nation has never been superseded by any legal means. Therefore, the lands which the Treaty affirms as belonging to the Western Shoshone Nation are still under their jurisdiction. Western Shoshone have often made this objection to BLM actions. The DEIS does not take the Treaty of Ruby Valley into account in its management considerations, nor does it show that the Treaty has been legally abrogated. Several other legal documents support the continuing existence of Western Shoshone land rights including the 1787 Northwest Ordinance, the 1848 Treaty of Guadelupe Hildago, and the Nevada Territorial Act of 1861. Despite assertions that the U.S. Supreme Court settled the issue of Western Shoshone land title in *U.S. v.Dann*, title has never been litigated, and the U.S. has yet to show how it has acquired Western Shoshone lands through due process.

It should be noted that cash payment such as the Claims money, often made reference to by the U.S. government when discussing the land rights issues, does not nullify a Treaty. One does not buy or sell their inherent sovereign rights. The Treaty was a recognition of these rights by the U.S. In a nation to nation agreement, one nation cannot unilaterally decide that the other side has lost its nationhood, especially by offering money.

A The decision to prepare an EIS reflects recognition that a proposed project could have significant environmental impacts. The process developed for preparing EISs involves publication of a Draft EIS to provide reviewers an opportunity to determine the adequacy of the analysis in the Draft EIS prior to preparing the Final EIS. Taken in total, the Western Shoshone Defense Project comments state that the proposed mining poses a significant impact to some Western Shoshone people from a historical and cultural basis.

Section 3.17 of the DEIS discussed the aboriginal ties of the Western Shoshone and Northern Paiutes to the project area and surrounding region. The DEIS acknowledged tribal concerns about impacts to the natural resources of the area, including the air, land, plants, animals, and springs, and also to burials stemming from a fight in the 1850s or 1860s between the U.S. Army and a group of American Indians. This incident may be the origin of the name "Battle Mountain," or a related skirmish between the Euro-Americans who immigrated into the area to settle on land occupied by tribal people. Although BLM research has not identified any documentary or physical evidence of this battle, tribal oral histories describe a battle and relate accounts of young men who were killed being buried at the battle site. BLM and the Battle Mountain Band of the Te-Moak Tribe are currently working toward an agreement to develop appropriate mitigation measures to handle burials, human remains, unexpected discoveries, documentation and/or other issues of concern. The specific comments made by the Western Shoshone Defense Project have been addressed in the final EIS for the Trenton Canyon Project.

B Your comment has been addressed in the expanded section on the Treaty of Ruby Valley in Chapter 3 of this FEIS, page 3-45.

Letter #21 (Cont.)
COMMENTS

· The current Draft **United Nations Declaration On The Rights of Indigenous Peoples**, which the U.S. is a party to, supports the claims of the Western Shoshone Nation. Articles 36, 30 and 26 are particularly relevant:

Article 36

Indigenous peoples have the right to the recognition, observance and enforcement of treaties, agreements and other constructive arrangements concluded with States or their successors, according to their original spirit and intent, and to have States honor and respect such treaties, agreements and other constructive arrangements. Conflicts and disputes which cannot otherwise be settled should be submitted to competent international bodies agreed to by all parties concerned.

Article 30

Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands, territories and other resources, including the right to require the States obtain their free and informed consent prior to the approval of any project affecting their lands, territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources. Pursuant to agreement with the indigenous peoples concerned, just and fair compensation shall be provided for any such activities and measures taken to mitigate adverse environmental, economic, social, cultural or spiritual impact.

Article 26

Indigenous peoples have the right to own, develop, control, and use the lands and territories, including the total environment of the lands, air, waters, coastal areas, sea-ice, flora and fauna and other resources which they have traditionally owned or otherwise occupied or used. This includes the right to the full recognition of their laws, traditions and customs, land-tenure systems and institutions for the development and management of resources, and the right to effective measures by the States to prevent any interference with, alienation of or encroachment upon these rights.

C These articles in the U.N. Declaration support our contention that the Western Shoshone Nation has a sovereign right in determining which projects may occur within their traditional land base. U.S. and specifically BLM policy to this point in time has been in violation of these articles. The Trenton Canyon DEIS is particularly deficient because it fails to address the issue of Western Shoshone land rights and the impact of this mine on "resources" of extreme importance to the continuing existence of the Western Shoshone Nation, i.e. water, plants and animals. The Western Shoshone Nation has not given its "free and informed consent" to this mining project. Fair compensation and mitigation as required by Article 30 of the U.N. Declaration has not been provided for the destruction of water resources and cultural features in the Trenton Canyon area.

D Some confusion exists around the provisions in the Treaty of Ruby Valley which permit mining in Western Shoshone territory. The U.S. Supreme Court has ruled that treaties are to be interpreted as they were understood at the time of signing. This ruling is further reinforced by Article 36 of the U.N. Declaration which states that treaties are to be recognized and enforced according to their original spirit and intent. In 1863 mining was of an entirely different nature. The Western Shoshone in no way agreed to the scale, intensity, or form of modern open pit heap leach gold mining.

Environmental Concerns

E The environmental impacts of this project have been underestimated or misrepresented, and plans for mitigation are either inadequate or nonexistent. Despite the optimistic predictions of this EIS that the Trenton Canyon Project will have minimal impacts to the environment, it is evident to us that this project cannot have anything but a significant negative impact on the ecological health of Western Shoshone territory. Of particular concern is the damage the project will do to the high country of the Battle Mountain range and the potential to impact the waters of Cottonwood Creek canyon and the Mud and Ames springs. The alternatives to the proposed action which were more fully developed do not provide significant improvements to environmental quality, and The following comments and questions will be referenced to the page they are referring to in the DEIS.

F 2-39 In the discussion of the Heap Leach and Process Overflow Pond Closure facilities, it is stated that plans will be developed 2 years prior to closure pursuant to the NDEP. The heap leach pads and

RESPONSES

C Your comment has been addressed in the expanded section on the Treaty of Ruby Valley in Chapter 3 of this FEIS, page 3-45.

D Under United States law, the understanding of treaties at the time of their signing is moot to the extent that subsequent congressional acts modify the original treaties. See the response to the previous comment.

E This comment is noted.

F BLM will be involved with the closure plans and will stipulate that a copy of the plans be forwarded to the BLM for review and comment. The closure plans would be developed to meet or exceed requirements specified in Nevada Administrative Code (NAC) Chapter 445A.

COMMENTS

F solution ponds represent a long term source of concentrated heavy metals and other contaminants. Without these plans in place now, no one can effectively assess the potential impacts of these sites on the environment in the long term. The BLM can not forfeit its responsibilities to the State.

G **2-50, 2-54** In the discussion of the economics of backfilling a chart documenting the price of gold over a one year period is used to demonstrate that the "variability of price of gold...supports the possibility that potential future mineral resources could be buried as a result of backfilling decisions." Price fluctuation over a 25-100 year period would perhaps be a better indicator. Just as important as price of gold is the price of fuel. A sharp rise in the price of diesel or coal would certainly impact the economic feasibility of the project. If we are going to engage in future speculation then this must certainly be accounted for. What is the time frame that feasibility is considered within? Who determines what is feasible? If economics are going to be used to justify what can and cannot be done then the people deserve a full discussion of the value of the ore body to be excavated. Without this information there is no way for the public to assess what is and isn't economically feasible. These questions are mostly directed towards the argument that backfilling would cover up future ore reserves. It seems just as reasonable to assume that perhaps the price of gold would go so much to make possible the re-excavation of pits to extract additional ore. Therefore we don't feel that the potential to bury future mineral reserves is a valid excuse to reject backfilling.

H **2-56** In the alternative for a central heap leach facility, why was only one location, between two creeks considered? It seems as though there are other locations without the close proximity of surface waters where the centralized facility could be constructed. The current plans to locate the heap leach facilities at the Valmy pit adjacent to springs is quite unnecessary and irresponsible.

I **2-57** If the total backfill alternative has been rejected, then the public deserves to see the economics. How much more would it cost and how does this compare to the value and size of the ore reserves at the site?

J The hydrological and geochemical studies are insufficient to convince us that the project will have negligible impacts on the waters of this area. Water is sacred, it is the source of all life. It is more precious than gold, and in this arid environment, its in very short supply, especially surface water. For these reasons the current proposals represent an unacceptable risk.

What is the accuracy of the models used for determining the liklihood of acid mine drainage? It is our understanding that at times in the past these models predicted there would be no problem, where today there is acid mine drainage. We do not believe that water percolating through the waste piles will be of the same or better quality then the springs and creek below. The amount of samples taken to compute the liklihood is minute compared to the actual amount of ore. 32 samples for three different pits is a very small number. I'm sure many more cores and samples were drilled to define the ore body. Why wasn't the same precision used to determine the geochemistry?

Springs along Cottonwood

K Three springs along Cottonwood Creek would almost certainly be impacted by the pits above them. Springs CCS-21, and CCS-20 are described as only flowing when there is rapid snowmelt, being fed by "temporary saturated perched zones." Because the construction of the pits is expected to drain or otherwise impair these "temporary perched zones," it seems more than likely these springs will no longer flow, or flow less frequently. Spring CCS-4A sits beneath the Trenton Canyon pits and flows year round. There is no analysis or discussion on what impact the pits above will have on the flow of these springs. Snowfall at the high elevations is the primary means for the groundwater to be recharged. As the snowpack melts, water percolates through the soil and rock to eventually emerge in

RESPONSES

G BLM is satisfied that the economic analysis presented by Newmont is sufficient to eliminate the alternative of completely backfilling the pits. Examining the price of gold for a 25-100 year period would not clarify the economic questions associated with backfilling the pits. BLM believes that the relative costs of the many operational factors, including the price of fuel, have to be considered to determine economic feasibility. Examining how the price of these various factors may have shifted in the past or speculating on how they may shift in the future is not relevant to this action and is beyond the scope of this EIS. Likewise, the value of the ore body cannot be established given the unknowns in the future of the price of gold or the operational factors. What is known is the gold content of the ore, the extent of the ore body, and how much of this ore body, by today's standards, is economically reasonable to extract.

H Newmont evaluated all potential sites for heap leach facilities based on the requirement of reasonable haul distance and relatively level topography. Based on the analysis in the DEIS, BLM is satisfied that there would be no impacts to surface waters from the heap leach facilities in the proposed locations. Analysis of alternate locations was not considered necessary.

I Please refer to Response G.

J (a) Failure of Predictions

Generally, acid generation or heavy element release from wastes that were not predicted to be potentially acid generating or a potential source of heavy elements in leachates can be traced to several sources:

- Incorrect acid-base accounting classification criteria were used. This occurred in the Appalachian coal fields where an NNP criteria of -5 kg $CaCO_3$/t for mixed wastes resulted in acid generation. Current regulatory criteria are more stringent and based on the ANP/AGP ratio rather than the NNP.
- Potentially acid generating materials were inadequately mixed with acid consuming materials. This can happen if there is a wide range in acid generation potential and different rock types occur at different locations within the pits. The result can be acidic conditions in material that has an overall non-acid generating balance, or non-acidic conditions elevated with heavy element concentrations in solution.

Responses to Comments J and K are presented on the following pages.

J (Continued)

- Incorrect assumptions were made on the reactivity of wastes under site conditions. Examples exist of low site temperatures being claimed as a mitigation for potentially acid generating rock. It is known that sulfide oxidation is exothermic (heat releasing).

The certainty of predictions increases as: the proportion of wastes with high sulfur and low ANP (low ANP/AGP) decreases; the overall ANP/AGP balance increases beyond 2; the requirement for special handling decreases; and the commitment by the mining company and personnel at all levels to monitor acid generation potential during mining increases.

The Trenton Canyon Project represents a condition in which the degree of confidence is high since sulfur concentrations are very low (due to prior oxidation), carbonate minerals are abundant and generally in excess, and would allow little requirement for special handling of wastes. The Province of British Columbia, Canada has set very stringent requirements for classifying acid generation materials in order to protect sensitive fish resources due to past mining impacts. The Province has indicated that rock with less than 0.3% sulfide sulfur is suitable for construction (i.e., lowest risk of acid generation - no containment of drainage required). The vast majority of Trenton Canyon Rock falls in this category, indicating its low risk for causing water quality impacts.

(b) Quality of Water Comparable to Downstream Springs

The prediction of water quality characteristics was based on the test work conducted on samples from the site. As indicated in Appendix A of the DEIS, heavy element concentrations are expected to be controlled by their slow release under weathering conditions and pH. The relationship between pH and metal concentrations were consistent with basic equilibrium chemistry thermodynamics and are therefore reasonable predictions of actual field behavior.

(c) Degree of Samples Compared to Ore Reserve Estimation

The number of samples collected needs to be tailored to the level of information required. Ore reserve estimation requires a large number of samples to ensure that grades are laterally predictable. The extent of sampling to determine gold grades is based on the need to reduce the statistical uncertainty of predictions between drill holes. Miscalculation of ore grades between holes can lead to fatal errors in understanding the economics of the deposit.

Response to Comments J is continued on the following page.

J (Continued)

Likewise, sampling to evaluate acid generation potential is based on the need to refine predictions for rock units that may require special handling. At Trenton Canyon, geological data indicated that sulfur contents were very low (i.e., static testing indicated a mean pyritic sulfur concentration of 0.10 weight-percent (81 samples)). This observation indicated that sampling should be designed to confirm the observation, with particular emphasis on evaluating the isolated zones where pyrite was observed. Sampling was designed to provide broad coverage of the various pits and was biased towards visibly pyritic zones. The results indicated that sulfur content was indeed very low and that very little of the rock would be expected to be acid generating. As the results were consistent with visual observations and the overall oxidized character of the rock, the level of sampling conducted is adequate.

K Three springs are identified on Figure 3-1 of the DEIS along the west side of Cottonwood Creek between the Trenton Canyon pits and Cottonwood Creek. They are CCS-4A, CCS- 20 and CCS-21. Comparison of spring elevations with piezometric surface elevations (SMI, 1996) suggest that CCS-4A is recharged by a laterally continuous water-bearing zone beneath the Trenton Canyon pit. CCS-4A will therefore not be affected by disruption of the perched water zone. Springs CCS-20 and CCS-21, on the other hand, are likely fed by temporarily saturated perched zones (DEIS, page 3-7). The Proposed Action would create a pit above these springs, and decrease the vadose zone thickness. The physical depression of the pit would collect snow during the winter months. During spring melt, the runoff waters would likely be delivered to the groundwater table more rapidly than the pre-mining state.

Spring CCS-20 occurs at an elevation of approximately 6,950 feet above mean sea level (amsl), an estimated 250 feet above the extrapolated piezometric surface at 6,700 feet (SMI, 1996, Figure 3-2a). This spring flows only in response to rapid snowmelt from heavy snow years. Measured flow was 1 gpm (SMI 1996, Table 3-2). This spring is apparently fed from a perched water zone. The recharge area for this perched zone is not known, but based on topographic relationships is unlikely to intercept the southern-most extent of the Trenton Canyon pits.

Spring CCS-21 occurs at an elevation of approximately 6,580 feet amsl, an estimated 160 feet above the measured piezometric surface at 6,420 feet (SMI, 1996, Figure 3-2a). This spring flows only in response to rapid snowmelt from heavy snow years. Measured flow was 2.2 gpm (SMI 1996, Table 3-2). This recharge zone for this spring has a small area.

Response to Comment K is continued on the following page.

Letter #21 (Cont.)
COMMENTS

K springs and Cottenwood creek. While we are not hydrologists it seems reasonable to suggest that stripping the soil in the high county and creating open pits or at least cuts in the bedrock may reduce the ability of that area to absorb moisture and recharge the aquifer, thereby **directly** impacting these springs.

L **Mud Spring and Ames Spring**

Of immediate concern with this part of the Trenton Canyon proposal is the fact that there are only 2 springs providing water to the lower elevation foothills. Both are located down gradient (below) from proposed heap leach facilities, greatly increasing the likelihood of contamination in the event of a spill or leak at the heap leach pads. Mud Spring "represents the intersection of a perched saturated zone with the ground surface." This would be a shallow alluvial aquifer and would be the first aquifer encountered by a leak in the heap leach pads. Ames Spring "may" be fed by a similar system, yet it appears there has been no hydrological analysis to establish this. While mining companies claim that such facilities do not leak, public records clearly demonstrate the probability of leaks and spills. At a past meeting in Battle Mountain, Battle Mountain Gold officials admitted to groundwater contamination caused by their facilities on the eastern and southern flanks of the Battle Mountain range.

The two springs (Mud and Ames) near the "Valmy" pit area are used by wildlife and livestock, and were probably frequented in the past by Newe. The construction of heap leach facilities at the proposed locations present a definite threat to the springs, which have both cultural and ecological value. In the event that this mine is permitted, Newmont should at the very least relocate the heap leach facilities so that they are below the springs.

M **4-15** "Since the North Peak and Valmy heap leach facilities would be designed and operated in accordance with NDEP standards, the risks of impacts to surface water due to spills, leaks, and overflows is extremely low." This assertion is simply not supported by the evidence contained in NDEP files. Just last year the operator of this project, Newmont, was responsible for one of the largest spills of cyanide in Nevada history. Given other evidence in NDEP files, it would suggest that spills and leaks are quite probable during the life of the mine, and given the close proximity of these facilities to the springs the potential to impact them seems great.

N **4-16, 4-19** Sedimentation of Cottonwood Creek appears to be quite likely, despite the assertion that the berm along the road will capture sediment. According to the DEIS the Trenton Canyon area is has severe water erosion potential. Sediment would be primarily transported in water. Culverts installed at various points along the berm would allow water containing this sediment to pass through into the creek. Due to the steep incline of the slope and the very narrow road on which the berm will be constructed, it seems unlikely that it will catch all the falling material, especially rocks and boulders which can build up momentum. Moniitoring of Cottonwood Creek on a semiannual basis is clearly insufficient to indentify and prevent degradation in a timely manner. Daily or weekly monitoring is the only way to ensure that the creek is not impacted by mining activities.

O **4-20** "the extent that those perched zones connect with deeper aquifers is unknown. The impact of the loss of the perched zone recharge to groundwater recharge is unknown, but is believed to be insignificant." This statement from the DEIS supports our previous assertions that the hydrology is inadequate and that the BLM has not analyzed the effects of the Trenton canyon pits on the springs along Cottonwood Creek.

P The fact that no mitigation is prescribed for groundwater contamination from the pits or overburden is irresponsible on the part of the BLM. Again the buck is passed to the NDEP, which

RESPONSES

K (Continued)

Spring flows from CCS-20 and CCS-21 represent an insignificant source of water to Cottonwood Creek when compared to the total watershed. Because they have seasonal flows, the springs are not dependable or significant sources of water for wildlife or livestock. Therefore, no monitoring or mitigation of these springs is proposed. Spring flow from CCS-4A would be monitored during and after the mining operation. If monitoring data indicate significant reduction in flow to the spring or an adverse impact on wildlife habitat resulting from the Proposed Action, Newmont will supply an alternate source of water acceptable to BLM.

L Issues concerning the two springs will be addressed in separate discussions.

Mud Spring is located at an elevation of 5,280 feet above mean sea level (amsl) (Shepherd Miller, 1996). Mud Spring is located topographically downgradient from the proposed Section 29 heap leach pad, North Valmy pit and overburden disposal areas. Groundwater at Piezometer DVA/329 was recorded at an elevation of 5,052 feet amsl (Shepherd Miller 1996). No perched water was noted in logs from Piezometer DVA/329. Piezometer DVA/329 is located between the proposed Section 29 heap leach pad and upgradient of Mud Spring.

Discontinuous perched water zones were noted in two of five borings advanced beneath the proposed Section 29 heap leach pad. No continuation of these zones was noted in field logs from the other three pad borings or Piezometer DVA/329.

Two conclusions are formulated based on these observations: 1) it is not likely that Mud Spring is in connection with the groundwater encountered in Piezometer DVA/329; and 2) it is not likely that Mud Spring is connected with the discontinuous perched water zones located below the proposed heap leach pad.

Ames Spring is located at an elevation of 4,970 feet amsl (Shepherd Miller, 1996). Ames Spring is located topographically lower than the proposed Section 21 leach pad. A perched water zone was noted in one of five borings advanced below the proposed leach pad; no water was encountered in the other four borings (Shepherd Miller 1996). The elevation of the perched water was approximately 4,950 feet amsl, 20 feet lower than Ames Spring. The perched water was noted in a sequence of clay-rich zone in a boring located approximately 1,000 feet from Ames Spring (Shepherd Miller, 1996).

Two conclusions are formulated based on these observations: 1) the perched zone encountered beneath the proposed leach pad occurs in a low permeability clay; the clay is not likely to serve as a preferential pathway to Ames Spring; and 2) groundwater elevation data indicate Ames Spring is located higher than the perched zone beneath the pad.

Responses to Comments M, N, O, and P are presented on the following page.

Letter #21 (Cont.)

COMMENTS

RESPONSES

M BLM believes that the risk of impact to surface water resulting from a hazardous substance release is extremely low. Handling, storage, and transport of hazardous or toxic materials would be performed as per the guidelines established in the Spill Prevention, Control, and Countermeasure Plan (SPCC) and/or Emergency Response Plan (ERP). The SPCC and ERP provide protocols for notification, containment, cleanup and waste disposal in the event of a release of hazardous or toxic materials.

N This monitoring suggestion has been noted and will be considered in the final decision.

O See the response to Comments K and L.

P Groundwater monitoring would be conducted at the site for a specified performance period during mining operations and after mine closure. No mitigation activities are proposed at present because geochemical evaluation of the rock types associated with the Proposed Action indicate an extremely low likelihood of metals leaching from either the tested overburden materials or the pit excavations. In the event monitoring data indicate significant reduction in groundwater quality resulting from the Proposed Action, Newmont will develop and implement mitigation measures acceptable to BLM.

Letter #21 (Cont.)
COMMENTS

P already has a difficult time keeping pace with current mining activity. The potential for shallow pit lakes with poor quality has been demonstrated at Battle Mountain Gold's operations where perched aquifers and/or precipitation help create them.

Q **4-34** Within the air quality discussion it was stated that the closest "receptors" where in the town of Valmy. What about the animals and plants living near the mining? Do they not breath? How will the air quality affect their health and the use of their habitats?

R **4-43, 4-45** There is no discussion of how the very steep slopes of the dumps in Cottonwood Canyon would be successfully revegetated. Reclamation of these steep slopes would be very difficult, erosion being quite likely. "if reclamation efforts are successful, there would be no residual adverse effects to the site outside the pit areas after mine closure" This is hard to believe. What are the chances of reclamation being completely successful? How much time will it take for complete reclamation? Where is the evidence of mines being completely reclaimed outside of their pits?

S The discussion of the impacts on wildlife is inadequate and supported by little data, or contradictory statements. The Cottonwood Canyon area is rich in wildlife habitat. First is the potential for nesting hawks and eagles in the crags and rimrock near the mining area. Occupied nests could be rendered unlivable by blasting and mining operations. The disposal of waste rock down the draws would destroy existing vegetation such as the berry bushes previously mentioned, an important source of wildlife food. We object to the BLM deeming the destruction of this habitat as insignificant.

T **4-50, 4-51** "The greatest bat activity occurs in riparian areas which would not be affected by the Proposed Action." "The Proposed Action would have no direct impact to aquatic habitats and fisheries." "Macroinvertebrates and insects and aquatic habitat may be impacted by sedimentation." This sedimentation is indeed a direct impact. If you reduce the insects you affect the fish and the bats. The BLM seems to be unaware of its own contradictions.

U Cumulatively, this project will have an especially destructive impact on the Western Shoshone people because of the unique cultural/historical relationship to the land. Based upon our knowledge there will be cultural sites destroyed by this mining operation. This destruction represents a cumulative attack on the history, traditions, culture and spirituality of the Western Shoshone people. This destruction of a particular people is known as genocide. We want to make it known that we support the efforts of all Western Shoshone currently involved in the efforts to protect these sites, and in no way are these comments to be construed to speak for anyone but the organizations they are submitted by. We hope the BLM will consider these comments seriously, and reevaluate the current proposal.

Sincerely,

Christopher Sewall,
Staff, WSDP

Jack Orr,
Director. WSRI

RESPONSES

Q Please refer to the revised Air Quality sections in Chapter 3, Modifications to the Draft EIS, page 3-33. The DEIS shows the air quality at the boundary of the project meets NAAQS requirements. Therefore, any plants or animals living on or near the project area would not be affected. Air quality analysis of the Proposed Action concludes the project would have minimal effect on human receptors (see revised Air Quality sections of the FEIS), therefore, BLM believes there would be no impact to animals and plants or their habitats as a result of air emissions from the project.

R Technical criteria were used to determine the final reclamation slope configurations and were based on an evaluation of geotechnical and erosional stability and suitability for revegetation purposes. The design criteria were established to:

- Ensure the stability of reclaimed slopes by meeting or exceeding minimum factors of safety for slope stability,
- Minimize erosion by satisfying minimum acceptable soil loss criteria, and
- Provide surface configurations suitable for successful revegetation.

Overburden disposal areas are designed to require minimal regrading to achieve the final reclamation configurations. Regrading would provide gentle transitions and remove sharp or abrupt slope changes to blend the regraded surfaces into the natural surrounding topography, to minimize erosion, and to aid in successful revegetation efforts.

Table 2-4 of the DEIS presents a proposed time schedule for reclamation. After three years, areas which do not meet the established criteria would be evaluated, and a decision would be made with the regulatory agency concerning how to best meet the revegetation goal.

S The DEIS acknowledges that raptors use the area for nesting and foraging, active raptor nests have not been observed in crags or rimrock near the mining area and available habitat is limited. The DEIS acknowledges on page 4-51 that there may be an impact to potential nest sites due to mining operations. Vegetation disturbance is also discussed throughout the wildlife impact section. Page 4-41 of the DEIS, Impacts to Plants with Cultural Value, discusses that "the disturbance of lands for pit development and overburden disposal could directly affect these plants and their habitats." Mitigation involving coordination with Native Americans to select appropriate native species for reclamation is described on page 4-44, Section 4.8.2 of the DEIS. The intent of reclamation is to replace disturbed habitat with a community that supports similar species prior to disturbance. The reconfiguration of overburden disposal areas and the development of pit highwalls would create adequate cliff faces for cliff-nesting species.

Responses to Comments T and U are presented on the following page.

COMMENTS

RESPONSES

T Best Management Practices and erosion control measures as part of the Plan of Operations are designed to reduce sedimentation below regulatory standards. Sedimentation impacts to riparian areas will be minimized to levels that are experienced naturally during peak runoff and high intensity storm events through erosion control measures. Such measures are specifically identified in the reclamation plan, and include:

- Using siltation fences, berms, and hay or straw bales to catch sedimentation above drainage systems during earthmoving and grading operations,
- Rerouting runoff and drainage around overburden disposal areas, topsoil, and ore stockpile areas,
- Placing culverts at all road crossings,
- Revegetating all available surfaces as soon as possible, and
- Using berms, terraces, mulches, and tackifiers to resist erosion.

U In addressing all of these requirements in conjunction with preparation of the DEIS, the BLM has contacted the tribal governments of the Te-Moak Tribes of Western Shoshone, Winnemucca Colony, Fort McDermitt Reservation, Duck Valley Shoshone-Paiute Tribes, and the Shoshone-Bannock Tribes of Fort Hall. BLM also contacted other related interest groups including the Western Shoshone National Council, Western Shoshone Historic Preservation Society, and Carrie Dann, a Western Shoshone from Crescent Valley who is an advocate for Shoshone cultural preservation. Individuals from the Battle Mountain, Duck Valley, and Crescent Valley have participated in field trips to the project area in October 1996, and May and June 1997. The Battle Mountain and Elko BLM districts continue to meet monthly with the council of the Te-Moak Tribe of the Western Shoshone for government-to-government discussions. This is a forum for ongoing consultations regarding not only the Trenton Canyon Project but also the entire BLM program in northeastern Nevada.

The DEIS acknowledges that at least four significant archaeological sites would be removed by the proposed mine, however, through archaeological studies these resource impacts will be mitigated. Consultations with the Western Shoshone are ongoing to determine whether there are other significant traditional cultural places in the project area. Such losses accumulate to those from previous land disturbing activities. The culture of the Western Shoshone and their historical relation to their traditional territory has changed significantly since Euro-Americans arrived. The Trenton Canyon Project is a further increment to this ongoing cultural change. If burials are present and need to be relocated, the Western Shoshone or other affiliated tribes would undoubtedly consider such impacts to be significant, but the Native American Graves Protection and Repatriation Act provides lineal descendants or affiliated tribes control over the treatment and disposition of such remains.

Chapter 5

Preparers and Contributors

CHAPTER 5 - PREPARERS AND CONTRIBUTORS

5.1 BASELINE DATA AND SUPPORTING DOCUMENTS

The documentation for baseline data and support material for the Environmental Impact Statement were prepared over a period of four years by a team of professional resource specialists and environmental consulting firms. The scope of the studies was to survey and record the existing conditions and to observe the dynamics of the project areas and regional study area. The preparers of these baseline studies are listed below with a brief outline of their respective contributions. For a citation of the reference documents prepared from their studies, please refer to Chapter 6 - References. Copies of these studies are available for review at the U.S. Bureau of Land Management, Winnemucca District, Winnemucca, Nevada and the Lone Tree Mine, Newmont offices, Valmy, Nevada.

Table 5-1
Preparers of Baseline Supporting Documents

Firm or Organization	Contribution
Bureau of Land Management Winnemucca District Office Winnemucca, Nevada	Draft and Final Sonoma-Gerlach Grazing EIS; Draft and Final Resource Management Plan and EIS for the Shoshone-Eureka Resource Area; Marigold Mining Company Stonehouse Project Phase I EA; Newmont, Trenton Canyon Mine Project Rights-of-Way EA
Resource Concepts, Inc.	Surface Water Resource Inventory; Proposed Wetland Delineation and Other Waters of the US Inventory; Soil Survey Baseline Study; Vegetation Baseline Study; Draft Waters of the United States Wetlands Baseline Survey; Small mammal sampling; Wildlife Baseline Studies; Range Resources Baseline Study
Shepherd Miller, Inc.	Baseline Hydrology and Geochemistry
J. Firby	Paleontological Inventory of the Winnemucca District
J.H. Stewart, and E.H. McKee	Geology and Mineral Deposits of Lander County, Nevada

Table 5-1
Preparers of Baseline Supporting Documents

Firm or Organization	Contribution
Ronald Willden	Geology and Mineral Deposits of Humboldt County, Nevada
Newmont (with assistance of Shepherd Miller, Inc.)	Plan of Operations and Reclamation Permit Modification
US Department of the Interior, Fish and Wildlife Service	Species List for Trenton Canyon Area, Humboldt and Lander Counties, Nevada
V. Clay (prepared by Archaeological Research Services)	Cultural Resources Inventory of the Trout Creek Project, Humboldt County, Nevada; Inventory and Evaluation of 2100 Acres in Santa Fe Pacific Mining Inc's Proposed Trenton Canyon Project Area, Lander and Humboldt Counties, Nevada
Daniel Dugas (prepared by Intermountain Research)	Class III Inventory of 685 Acres; Class III Inventory of Section 21, T33N R43E
Gnomon, Inc.	GIS Map Indicating the Location of Known Eligible and Ineligible Cultural Sites in Relation to the Proposed Trenton Canyon Project
R.M. Harmon, M. Fong Meyer, C. Busby (prepared by Basin Research Associates)	Cultural Resources Inventory of the Marigold Mine Project
F. Johnson	Cultural Resources Inventory of Approximately 1261 Acres at the Lone Tree Hill Project; Stonehouse Mine Project: A Cultural Resource Inventory of Approximately 835 Acres in Humboldt County, Nevada
D. Newsome	Cultural Resource Inventory of 1,880 Acres South of the Marigold Mine, Humboldt and Lander County, Nevada
E. Obermeyer, D. Dugas (prepared by Intermountain Research)	Cultural Resource Inventory in the Trenton Canyon Area

Table 5-1
Preparers of Baseline Supporting Documents

Firm or Organization	Contribution
P. Quick (prepared by ICF-Kaiser Engineers)	Summary Report on Native American Consultation for the Trenton Canyon Gold Mining EA
M. Rusco, E. Seelinger	Report of Archaeological Reconnaissance Along Proposed 230 kV Transmission Line Right-of-Way of Sierra Pacific Power Company, Part 1: Tracy to Valmy, Nevada
D.P. Soper (prepared by Archaeological Research Services)	The Stone House Project: A Cultural Resources Inventory of 4100 Acres in Humboldt County, Nevada
Walsh	Class I Overview for Twin Creeks
S. Waechter (prepared by Far Western Anthropological Research Group)	Archaeological Survey of 640 Acres on Battle Mountain, Northern Lander County, Nevada

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Chapter 6

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Glossary

GLOSSARY

Acid-Base Accounting (ABA)	An evaluation of the potential for acid generation by comparing various levels and forms of acid-forming and acid-neutralizing materials found in ore or waste rock.
Acid drainage	Water from pits, underground workings, waste rock, and tailings containing free sulfuric acid. The formation of acid drainage is primarily due to the weathering of iron pyrite and other sulfur-containing minerals. Acid drainage can mobilize and transport heavy metals which are often characteristic of metal deposits.
Acid generation potential (AGP)	A material's potential to generate acid and produce acid drainage. Analytical tests used to assess acid generating potential are either static or kinetic.
Acid neutralizing potential (ANP)	The measure of carbonate material theoretically available to neutralize potential acid generated by ore or waste rock.
Acidic	A substance whose water solution dissolves active metals with the liberation of hydrogen; has a pH of less than 7.0.
Acre	A unit of land measure equal to 43,560 square feet.
Acre-Foot	The volume of water that will cover an area of one acre to a depth of one foot.
Adit	A horizontal mine passage driven from the surface for the working or de-watering of a mine.
Ad Valorum Tax	"In proportion to the value" or property tax.
Aesthetics	Of or pertaining to artistic perception or perceived beauty.
Airshed (Class I)	A designated boundary for evaluation of potential air quality impacts (Class I designates a specific air quality protection designation associated with Wilderness Areas.)
Alkaline soil	A soil that has a pH greater than 7.0.
Allotment	An area of land designated and managed for grazing of livestock.
Alluvial fan	A fan like deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium	A general term for all detrital deposits resulting from the operations of modern rivers, including the sediments laid down in river beds, floodplains, lakes, and fans at the foot of mountain slopes and estuaries.
Alternative (action)	An option for meeting stated need. One of several policies, plans or projects proposed for decision-making.
Ambient	That portion of the atmosphere, external to buildings, to which the general public (or neighboring businesses has access).
Analyte	Chemical constituents detected as a part of analysis or testing.
Ancillary facilities	Supplementary or subsidiary installations
Andesite	A dark-colored, fine-grained extrusive rock.
ANFO	A mixture of ammonium nitrate and fuel oil which is sued as a blasting agent.
Animal Unit Month (AUM)	The amount of forage necessary to sustain one cow and calf, or their equivalent, for one month. The calculation for the Battle Mountain Range is based on 14.3 acres/AUM.
Aquatic	Growing or living in or near the water.
Aquifer	A stratum of permeable rock, sand, etc., which contains water. Water source for a well.
Archaeology	The science that investigates the history of peoples by the remains of earlier periods of their existence.
Area of Potential Effect (APE)	A geographical area where the Proposed Action may cause direct or indirect effects to historic properties.
Artifact	Any object showing human workmanship or modification, especially from a prehistoric or historic culture.
Attainment area	A geographic region with which National Ambien Air Quality Standars (NAAQS) are met; three categories of attainment are defined Class I, Class II and Class III on the basis of the level of degradation of air quality which may be permitted.
Avifauna	Birds of a specified region or time.

Background	(Visual distance zone) The distant part of a landscape. The seen or viewed area located more than 3 to 5 miles from the viewer, and generally as far as the eye can detect objects.
Backfill	Waste material (i.e., rock) the is placed back in surface mine workings.
Barren solution	Non gold-bearing cyanide solution.
Base flow	A sustained or fair-weather flow of a stream.
Baseline data	Data gathered prior to the Proposed Action to characterize pre-development site conditions.
Basin and Range	Topography, landscape, or physiographic province characterized by a series of tilted fault blocks forming longitudinal, asymmetric ridges or mountains and broad, intervening basins; structure dominated by fault-block mountains separated by sediment-filled basins.
Bedrock	The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
Berm	An earthen structure, generally several feet high, which acts as a barrier to make it difficult or a vehicle to cross, or which redirect the flow of traffic, water, or other materials.
Best Management Practices (BMP)	Management actions that are designed to maintain water quality by preventative rather than corrective means.
Bond	A sum of money which, under contract, one party pays another party under conditions that when certain obligations or acts are met, the money is then returned; such as after mining reclamation occurs.
Botanist	A specialist in botany-a branch of biology that studies plants.
Candidate Species	Species identified by the U.S. Fish and Wildlife Service as appropriate for listing as threatened or endangered.
Carrying capacity	The number of organisms of a given species and quality that can survive in, without causing deterioration of, a given ecosystem through the least favorable environmental conditions that occur within a stated interval of time.
Claimant	A person who makes a claim-e.g. right of ownership.

Clay	As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
Coarse fragments	If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15.2 to 38.1 centimeters (6 to 15 inches) long.
Cone of depression	The geometry or shape of an inverted cone on the water table or artisan pressure surface caused by the pumping of a well. The cone of depression will disappear over time when well pumping ceases.
Contrast	The diversity of adjacent parts, as in color, tone, or emotions. The closer the juxtaposition of two dissimilar perceptions, in time or space, the more powerful the appeal of the attention.
Cover	Living or non-living material (e.g., vegetation) used by fish and wildlife for protection from predators, to ameliorate conditions of weather, or reproduce.
Cultural Resources	Archaeological, historic, and traditional cultural resources, including buildings, sites, districts, structures, or objects having historical, architectural, archaeological, cultural or scientific importance.
Cumulative Effect	The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).
Cyanide	A naturally occurring organic compound composed of carbon and nitrogen (CN); a solid chemical compound (sodium or calcium cyanide) is dissolved in water to form a solution which is suitable for the extraction of precious metals form ore by using a leaching process.
Demography	A statistical study of the characteristics of human populations with reference to size, density, growth, distribution and migration and effect on social and economic conditions.
Deposit	A natural accumulation, such as precious metals, minerals, coal, gas, oil, etc. that may be pursued for its intrinsic value; gold deposit.

Dewater	To remove water from a solution containing wastes in order to concentrate and then dispose of the wastes.
Direct Impacts	Effects which are caused by the action and occur at the same time and place (40 CFR 1508.8 (a)).
Discharge	The volume of water flowing past a point per unit time, commonly expressed as cubic feet per second, million gallons per day, gallons per minute, or cubic meters per second.
Disposal area	(waste rock) Also called a fill, storage site, or stockpile; an area where waste rock is place during mining either temporarily or permanently.
Diversion	Removing water from its natural course or locations, o controlling water in its natural course or location, by means of a ditch, canal, flume, reservoir, bypass, pipeline, conduit, well, pump, or other structure or device.
Ecological Type	A basic unit of land that has a unique combination of biotic (plant and animal species) and abiotic (landscape, soils and climatic) features; they differ from each other in their ability to produce vegetation and respond to management activities.
Effects	(See Impacts) Physical, biological, social, and economic results (expected or experienced) resulting from achievement of outputs. Effects can be direct, indirect, and cumulative, and may be either beneficial or detrimental.
Endangered Species	Those species officially designated by the U.S. Government that are in danger of extinction throughout all or a significant portion of its range.
Environmental Impact Statement (EIS)	A federally mandated report that analyzes potential environmental effects of federally funded projects or projects involving lands with federal jurisdiction.
Ephemeral	Present only during a portion of the year such as water courses which flow briefly in response to precipitation.
Erodibility (K-factor)	A means or factor used to estimate the erosion potential of soils through the use of the "Revised Universal Soil Loss Equation (RUSLE)."
Erosion	The group of processes whereby earth or rock material is loosened or dissolved and removed from any part of the earth's surface.

Ethnographic	Descriptive anthropology. The study of man in relation to distribution, classification, origin, environmental and social relations, and culture.
Exploration	The search for economic deposits of minerals, ore, gas, oil or coal through the practices of geology, geochemistry, geophysics, drilling, shaft sinking and/or mapping.
Extraction	The act of extracting or drawing a substance out of the earth, or some other object (e.g. extracting a tooth).
Fault	A fracture or fracture zone along which there has been displacement of the sides relative to one another parallel to the fracture.
Fauna	The wildlife or animals of a specified region or time.
Feasible	Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.
Federal Land Policy and Management Act of 1976 (FLPMA)	This Act of Congress established public land policy for the management of all lands administered by the BLM. FLPMA specifies several key directions for the BLM, notably that management be on the basis of multiple use and sustained yield; land-use plans be prepared to guide management actions; public lands be managed for the protection, development, and enhancement of resources; public lands generally be retained in federal ownership; and public participation be included in reaching management decisions.
Floodplain	That portion of a river valley adjacent to a stream or river channel which is covered with water when the stream overflows its banks during flood stage.
Forage	All browse and non-woody plants that are available to livestock or game animals for grazing or harvestable for feed.
Forb	Any herbaceous plant not a grass or sedge.
Foreground	(Visual distance zone) A term used in visual management to describe the area immediately adjacent to the observer, usually within ¼ to ½ mile.
Fugitive dust	Dust particles suspended randomly in the air from road travel, excavation and rock loading operations.

Game Species	Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fishermen under state or federal laws, codes, and regulations.
Genus	One of the major taxonomic groups used to scientifically classify plants or animals: several closely related species, or one species, make up one genus, while several genera, or one genus, make up a family.
Geochemistry	The study of the distribution and amounts of the chemical elements in minerals, ores, rocks, soils, water, and the atmosphere, and their circulation in nature, on the basis of the properties of their atoms and ions.
Geology	The science that relates to the earth, the rocks of which it is composed, and the changes that the earth has undergone or is undergoing.
Grade	A slope stated as so many feet per mile or as ft/ft (%); the content of precious metals per volume of rock (oz/ton).
Granite	A plutonic or igneous intrusive rock.
Gravel	Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.
Growth media	All materials, including topsoil, specified soil horizons, vegetative debris, and organic water, which are classified as suitable for stockpiling and/or reclamation.
Habitat	The region where a plant or animal naturally grows or lives.
Heap Leaching	An ore extraction method used for moderate to high grade ores, involves placing the ore-bearing materials in a mound and then "washing" by percolation of water which dissolve constituents from the rock and thus extracting soluble minerals.
Herbaceous	Of, or having the nature of, an herb or herbs as distinguished from woody plants.
Host Rock	A body of rock serving as a host for other rocks or mineral deposits such as a rock susceptible to mineral solutions.
Hydrologic	The distribution of surface and underground waters.
Hydrology	The science that relates to the water of the earth.

Impacts	(See Effects) Physical, biological, social, and economic results (expected or experienced) resulting from achievement of outputs. Effects can be direct, indirect, and cumulative, and may be either beneficial or detrimental.
Indirect Effects	Secondary effects which occur in locations other than the initial action or significantly later in time.
Infiltration	The movement of water or some other fluid into the soil through pores or other openings.
Intermittent stream	A stream that runs water in most months, but does not contain water year-round.
Intrusive Rocks	An igneous rock mass formed beneath the earth's surface.
Irretrievable	Applies to losses of production, harvest, or commitment of renewable resources.
Irreversible	Applies primarily to the use of nonrenewable resources, such as minerals or cultural resources or to those factors that are renewable only over long time spans, such as soil productivity. Irreversible also includes loss of future options.
Jurisdictional wetland	A wetland area delineated and identified by specific technical criteria, field indicators and other information for purposes of public agency jurisdiction. The federal agencies which administer jurisdictional wetlands are the Fish and Wildlife Service, Army Corps of Engineers, Environmental Protection Agency, and the Natural Resources Conservation Service.
Key viewpoint	The point(s) commonly in use or potentially in use where the view of a management activity is the most disclosing. The location which provides the means of studying the visual impact of alternatives to the landscape.
Kinetic cell testing	A method of testing rock materials to stimulate natural weathering. The test is used to assess acid-generating potential of rock.
Leaching	The removal of soluble material from soil or other material by percolating through soluble water or other solutions.
Leach Stockpile	A storage pile of leached material from the extraction process for ore removal.
Loam	Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Locatable Minerals	Valuable mineral deposits that include precious metals, base metals, refractory metals and by special enactment building stone and saline deposits.
Long-term impacts	Impacts that normally result in permanent changes to the environment.
Middleground	(Visual distance zone) The space between the foreground and the background in a picture or landscape. The are from ½ to 3 to 5 miles from the viewer.
Migratory	Birds, animals, or people that migrate, or move from one region or country to another.
Mine Pit	An opening or excavation from the extraction of a mineral deposit.
Mitigation	Includes: • Avoiding the impact altogether by not taking a certain action or parts of an action. • Minimizing impacts by limiting the degree of magnitude of the action and its implementation. • Rectifying the impact of repairing or restoring the affected environment. • Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action. • Compensating for the impact by replacing or providing substitute resources or environments.
Modification	A visual quality objective meaning man's activities may dominate the characteristic landscape but must, at the same time, follow naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.
Multiple use	The management concepts under which BLM lands are managed. The management of the lands and their various resource values so they are utilized in the combination that will best meet the present and future needs of the American people.
Native Vegetation	Vegetation originating in a certain region or locality.
National Environmental Policy Act of 1969 (NEPA)	Public Law 91-190. Establishes environmental policy for the United States Among other items, NEPA requires federal agencies to consider environmental values in decision-making processes.

Nonpoint Source Pollution	Sources from which the pollution discharged are (1) induced by natural process including precipitation, seepage, percolation, and runoff; (2) not traceable to any discrete or identifiable facility; and (3) better controlled through the utilization of Best Management Practices, including process and planning techniques. This includes natural pollution sources not directly or indirectly caused by man.
Noxious Weed	A plant that interferes with management objectives of a given area of land at a given point in time.
One-hundred (100) year flood	A flood with a magnitude which may occur once every 100 years. A 1-in-a-100 chance of a certain area being inundated during any year.
Orebody	A mineral deposit that is being mined for its metals.
Outcrop	That part of a geologic formation or structure that appears at the surface of the earth.
Overburden	Material of any nature, consolidated or unconsolidated, overlying an ore deposit, excluding topsoil.
Oxide	A mineral compound of oxygen with one or more metallic elements.
Patented Mining Claim	A government instrument (or deed) that conveys legal title for public land to an individual or another government entity.
Paleontology	The study of life in past geologic time, based on fossil remains and their relationships to existing plants, animals, and environment, and the chronology of the earth's history.
Particulates	Small particles suspended in the air or generally considered pollutants.
Patented claims	Private land which has been secured from the U.S. Government by compliance with the laws relating to such lands.
Perched Water	Unconfined ground water separated from an underlying main body of ground water by an unsaturated zone.
Perennial Stream	A stream or part of a stream that flows continuously during all of the calender.
Permeability	The measure of the east with which a fluid can diffuse through a particular porous material.

pH	A measure of how acid or how caustic (basic) a substance is on a scale of 0-14. A pH of 7 indicates that a substance is neutral, pH less than 7 is acidic, and pH or greater than 7 is basic.
Physiographic province	A Region having a particular pattern of relief features or land forms that differs significantly form that of adjacent Regions (e.g., Basin and Range).
Piezometric surface	Any imaginary surface coinciding with the hydraulic pressure level of the water in a confined aquifer, or the surface representing the static head of groundwater and defined by the level to which water will rise in a well. A water table is a particular piezometric surface.
Plan of Operations	A detailed description presenting the methods, timing, and contingencies to be used during the operation of the Project. A document required from any person proposing to conduct mineral related activities while utilizing earth moving equipment and which will caus disturbance to surface resources or involve the cutting of trees.
Point source	Stationary sources of potential pollutants. In terms of mining, some examples of point sources are crushing and screening equipment, conveyor transfer points, and pond outlet pipes.
Porphyry	A rock texture characterized by large megascopic crystals surrounded by a matrix of microscopic minerals.
Potential Natural Community	Biotic community that would be established if all successional sequences were completed without additional human-caused disturbance under present environmental conditions. These are sites with good soil health or soil quality as well as indicators of rangeland health.
Precambrian	The period of geologic time from approximately 570 million years ago back to the formation of the earth.
Pregnant solution	The resulting metal-laden solution collected from the leaching process which contains dissolved metal values. The precious metals values are recovered from this pregnant solution, which then becomes the barren solution that is typically refortified and reintroduced to the leaching circuit.
Prehistoric Resources	Sites and associated artifacts that date from before the time of written records, which do not appear before the arrival of Spanish explorers in the sixteenth century in the American Southwest.

Prevention of Significant Deterioration (PSD)	A special permit procedure established in the Clean Air Act, as amended, used to ensure that economic growth occurs in a manner consistent with; protection of public health; reservation of air quality related values in national special interest areas; the opportunity for informed public participation in the decision-making process.
Prey	An animal hunted or killed for food by another animal.
Primitive Area	An area that is not developed; a pristine natural area.
Public Land	Lands administered by the Bureau of Land Management, vacant, unappropriated, and unreserved lands which have never left Federal ownership; also, lands in Federal ownership which were obtained by the Government in exchange for public lands or for timber on public lands.
Quaternary	A unit in geologic time extending from the present to approximately 2 million years ago.
Range	A large, open area of land over which livestock can wander and graze.
Range Allotment	A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on the National Forest System, BLM lands, state, and associated lands administered by federal and state land management agencies.
Raptor	Birds of prey such as hawks, owls, and eagles.
Rare Species	A designation for animals that are not presently threatened with extinction, but occur in such small numbers throughout their range that they may become endangered if their environments worsen.
Reclamation	The restoration of land to resemble its original condition or an acceptable substitute as to shape, vegetation, and wildlife.
Record of Decision (ROD)	A document separate from but associated with an Environmental Impact Statement which states the decision, identifies all alternatives, specifying which were environmentally preferable, and states whether all practicable means to avoid environmental harm from the alternatives have been adopted, and if not, why not (40 CFR 1505.2).

Recreation Opportunity Spectrum (ROS)	A method of measuring the ability of the forest land to meet the various types of demands imposed by a variety of recreation uses.
Recruitment	Refers to new species of plants that begin growing in a region.
Residual Ore	Left over ore, after part or most of the ore is taken away.
Residuum (geology)	Residue; an accumulation of rock debris formed by weathering and remaining essentially in place.
Revegetation	The reestablishment and development of self-sustaining plant cover. On disturbed sites, this normally requires human assistance such as seed bed preparation, reseeding, and mulching.
Riparian	An aquatic or terrestrial ecosystem that is associated with bodies of water, such as streams, lakes, or wetlands, or is dependent upon the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage. Riparian areas are usually characterized by dense vegetation and an abundance and diversity of wildlife.
Roosting Sites	A place with perches for birds or bats.
Rooting Depth	The depth to which a plant's, or tree's roots grow.
Runoff	Precipitation that is not retained on the site where it falls, not absorbed by the soil; natural drainage away from an area.
Saline soil	A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.
Sand	As a soil separate, individual rock mineral fragments from 0.05 millimeters to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class a soil that is 85 percent or more sand and not more than 10 percent clay.
Seep	An area, generally small, where water or another liquid percolates slowly to the earth's surface.
Shaft	A vertical mine opening from the surface into a mine.

Short-term impacts	Impacts occurring during project construction and operation, and normally ceasing upon project closure and reclamation. Each resource, by necessity, may vary in its definition of short-term.
Significant	Requires consideration of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole, and the affected region, interests, and locality. Intensity refers to the severity of impacts. The severity of an impact should be weighted along with the likelihood of its occurrence.
Silt	As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05) millimeter. As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
Slope	The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by the horizontal distance, then multiplied by 100. Thus a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.
Slope Classes	Slope (percent) Nearly level 0-2 Gently sloping 2-4 Moderately sloping 4-8 Strongly sloping 8-15 Moderately steep 15-30 Steep 30-50 Very steep 50-75 Extremely steep > 75
Soil	A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over time.
Special Status Species	Plants and wildlife species listed by U.S. Fish and Wildlife as endangered, threatened, proposed or candidates for such listing, BLM or Forest Service sensitive, or species of concern at the state level.
Spring	A place where ground water flows naturally from a rock or the soil on the land surface or into a body of surface water.

Stockpile	An accumulation of ore, stone, or other mined or quarried material, which provides a steady source of supply for the processing plant.
Subsoil	The soil below the surface soil or topsoil.
Subspecies	Any natural subdivision of a species that exhibits small, but persistent morphological variations from other subdivisions of the same species living in different geographical regions or times.
Substratum	Any layer lying below another layer such as rock units or soils.
Sump	A hole dug at the bottom of a mine shaft to collect water.
Tertiary	The first period of Cenozoic Era, spanning the time between 65 and 2 million years ago.
Texture, soil	The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay.
Threatened and Endangered (T&E) Species	Plants and animals listed by the U.S. Fish and Wildlife Service as threatened or endangered (see Endangered Species, Threatened Species).
Threatened Species	Those species officially designated by the U.S. Government that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
Topsoil	The upper part of the soil or "A" horizon which is the most favorable material for plant growth.
Torpor	A state that bats achieve during hibernation where physiological processes are slowed to reduce energy demands on the species.
Total Dissolved Solids (TDS)	Salt, or an aggregate of carbonates, bicarbonates, chlorides, sulfates, phosphates, and nitrates of calcium, magnesium, manganese, sodium, potassium, and other cations that form salts.
Toxicity	The potential of a substance to exert a harmful effect on humans or animals and a description of the effect and the conditions or concentrations under which the effect takes place.

Unavoidable adverse impacts	Those adverse impacts which result from an activity(s), which cannot be reasonably prevented or avoid and which remain as residual impacts following application of all reasonable control, reclamation, and monitoring measures.
Unpatented Mining Claim	A claim made under the authority of the Mining Law of 1872 on vacant, unappropriated public land, where valuable locatable minerals have been discovered.
Vegetation Communities	Species of plants that commonly live together in the same region or ecotone.
Visual Quality Objective (VQO)	Degree of acceptable alteration of the natural landscape. These include preservation, retention, partial retention, modification, maximum modification, and enhancement. Used by the Forest Service in classifying scenic resources of an area.
Visual Resource Management Classes	Classification containing specific objectives for maintaining or enhancing visual resources, including the amount of acceptable change to the existing landscape to meet established visual goals (BLM).
Visual sensitivity levels	A three-level rating system used to delineate areas receiving different amounts of exposure (present or potential) to user groups with differing attitudes towards changes in scenic quality. When combined with distance zones and Variety Class, make up Visual Quality Objectives.
Waste Rock	In mining, rock that must be broken and disposed of in order to gain access to or upgrade the ore.
Watershed	A drainage basin; the region drained by, or contributing water to a stream, lake, or other body of water.
Water Table	The level in the saturated zone at which the pressure is equal to the atmospheric pressure.
Waters of the U.S.	A jurisdictional term from Section 404 of the Clean Water Act referring to water bodies such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. The use, degradation, or destruction of these waters could affect interstate or foreign commerce. For this project the Waters of the U.S. are primarily intermittent streams.

Wetlands	Those areas that are inundated by surface or groundwater with a frequency sufficient to support vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.
Wilderness Study Area (WSA)	A roadless area which has been found to have wilderness characteristics.

	[illegible] reclamation, and monitoring measures.
Unpatented Mining Claims	A claim made under the authority of the Mining Law [illegible] discovered.
Vegetation Communities	Species of plants that commonly live together in the same region or ecosystem.
Visual Quality Objectives (VQOs)	Degrees of acceptable alteration of the natural landscape. These include preservation, retention, partial retention, modification, maximum modification, and enhancement. Used by the Forest Service in identifying scenic properties of an area.
Visual Resource Management Classes	Classifications containing specific objectives for maintaining or enhancing visual resources, including the amount of acceptable change to the existing landscape to meet established visual goals (BLM).
Visual sensitivity levels	A three-level rating system used to delineate areas receiving different amounts of exposure (viewers or potential) to user groups with differing attitudes towards changes in scenic quality. When combined with distance zones and Variety Class make up Visual Quality Objectives.
Waste Rock	In mining, rock that must be broken and disposed of in order to gain access to or upgrade the ore.
Watershed	A drainage basin; the region drained by, or contributing water to a stream, lake, or other body of water.
Water Table	The level in the saturated zone at which the pressure is equal to the atmospheric pressure.
Waters of the U.S.	A jurisdictional term from Section 404 of the Clean Water Act referring to interstate waters and lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. The use, degradation or destruction of these waters could affect interstate or foreign commerce. For this project the Waters of the U.S. are primarily jurisdictional wetlands.

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Appendix A

Reclamation Costs

Appendix A

Reclamation Costs[1]

ESTIMATE OF THE RECLAMATION COST

Equipment Rental, Operation and Labor Costs

Not applicable. Outside contractor prepared cost estimate.

Outside Contractor Costs

Shepherd Miller, Inc., in cooperation with J.D. Welsh & Associates, Inc. (WELSH), have prepared an independent cost estimate for reclamation of the Trenton Canyon Project. This estimate subsumes those costs associated with the reclamation procedures of the existing permitted, and proposed expanded and new facilities, as outlined in Section 3.0, and includes earthwork, revegetation of disturbed areas, and monitoring. The costs for the existing permitted facilities, which have been bonded, are subtracted from the total bond estimate to determine the incremental bond increase for the proposed activities.

Pursuant to the format and policies of the NDEP and BLM, the estimate has used Davis - Bacon hourly wage rates and has incorporated FICA and SIIS coverage. Equipment rates used are the hourly rates that were obtained from WELSH to estimate costs of performing similar work in Nevada. The base wage rates have been increased to include payroll burdens, field indirect costs, and office overhead. Equipment rates include fuel maintenance, depreciation, field indirect costs, and office overhead. Profit is not included in wage or equipment rates, but is included as a separate line item as suggested in the NDEP Cost Estimation Summary Sheet. An equipment list used in the cost estimating is provided below.

Equipment List

16G Motor Graders
222G Water Wagon
235 Excavator
631 Scrapers
769C Haul Trucks
8080 Water Wagon
988C, 966C Loaders
Challenger Tractor
D9, D10 Dozer
Harrow
Seeder
Lowboy

Other Costs

Not applicable.

Proposed Reclamation Activities with Cost

Proposed reclamation activities to be undertaken for the Trenton Canyon Project Reclamation Permit Modification include regrading, ripping compacted surfaces, hauling and placing growth medium

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[1] Source: Pages 25- 30 of the Plan of Operations, Appendix C - Reclamation Plan Modification, October 1997.

(where applicable), seed bed preparation (where necessary), and seeding. Production rates are based on Welsh's experience with mine reclamation projects in Nevada. The earthwork will be performed with conventional earthmoving equipment, such as loaders, haul trucks, dozers, and scrapers. Various support equipment, such as water trucks, is included. The costs are calculated based on acreages and cubic yards. Revegetation is assumed to include seed bed preparation, seeding, and purchasing seed. The revegetation costs are based on broadcast seeding, followed with a chain harrow. For conservative cost estimating, 12 inches of growth medium applied over heap leach pads and 6 inches of growth medium applied over the remaining disturbed areas was used to determine total cubic yards for each facility.

A breakdown of the acreages used to develop the estimate is provided in Table 1. Acreages have been increased to account for slope and surfaces where applicable. Descriptions of reclamation activities for each mine unit are provided in the following sections. A summary of all costs combined is provided in Table 2. The typical seed mixtures and application rates are presented in Appendix C of this FEIS. These seed mixtures and application rates may be modified as results from revegetation testing and concurrent reclamation are assessed.

Haul/Access Roads

The estimate for reclamation of 814 acres of haul/access roads includes recontouring (3,145,461 c.y.), ripping of compacted surfaces (432 acres), placement of 6 inches of loose growth medium over disturbed area (656,627 c.y.), if necessary, and seed bed preparation and seed application at a rate of 22.2 lbs. of Pure Live Seed (PLS) per acre. Access roads that provide access to private lands will remain open and will be downsized to a suitable width to allow access

Pit Berms

Berms will be constructed around the perimeters of the Valmy, Trenton Canyon and North Peak open pits. The estimate for earthwork to create berms includes contouring approximately 94,729 cubic yards of rock. A total of 42,628 lineal feet of berms will be constructed to a height of 5 feet with side slopes of 2.0H:1V and a 2-foot wide crest. The estimate for pit berms also includes seedbed preparation and seed application at a rate of 22.2 lbs. PLS per acre for the areas disturbed (20 acres) for construction.

Process Overflow Ponds

The reclamation of 21 acres for the three process overflow ponds will include folding the pond liner inward and covering with fill (115,950 c.y.), recontouring to the approximate original contour (33,880 c.y.), minor ripping (6 acres), placing of 6 inches of loose growth medium (16,940 c.y.), if necessary, seed bed preparation, and seed application at a rate of 22.2 lbs. PLS per acre.

Heap Leach Facilities

Reclamation of the 203 acres (plan view, 213 acres total accounting for sloped surfaces) for the three heap leach facilities will include slope recontouring per Section 3.0 (322,171 c.y.), regrading, placement of 12 inches of loose growth medium (343,640 c.y.), if necessary, seed bed preparation, and seed application at a rate of 22.2 lbs. PLS per acre for the flat surfaces (72 acres) and 30.0 lbs. PLS per acre for the sloped surfaces (141 acres).

Waste Rock Disposal Areas

Reclamation of 673 acres plus 7 acres to account for partial backfill of an open pit for a combined total of 680 acres (plan view, 713 acres total accounting for sloped surfaces) will be performed for the overburden disposal areas. Reclamation will include slope recontouring per Section 3.0 (8,413,910 c.y.), regrading, placement of 6 inches of loose growth medium (575,153 c.y.), if necessary, seed bed preparation, and seed application at a rate of 22.2 lbs. PLS per acre (177 acres) for the flat surfaces and 30.0 lbs. PLS per acre for the sloped surfaces (536 acres).

Ancillary Facilities

The reclamation of 26 acres of ancillary facilities will include recontouring (41,947 c.y.), ripping compacted surfaces, placement of 6 inches of loose growth medium (20,973 c.y.), if necessary, seed bed preparation, and seed application at a rate of 22.2 lbs. PLS per acre. Ancillary facilities include office/maintenance areas, water supply systems, electrical distribution systems, propane systems, bio-remediation cells, barrel handling facilities, lime storage silos, and other various storage areas.

Water/Communication Line

Reclamation of 10 acres for the water/communication line represents areas where the line is not adjacent to a haul or access road and is based on a disturbance width of approximately 20 feet. Where the line is adjacent to a haul or access road, the associated disturbance is included in the reclamation of the road. Reclamation of the water/communication line includes recontouring (16,133 c.y.) placement of 6 inches of growth medium (8,067 c.y.), if necessary, seed bed preparation and seed application at a rate of 22.2 lbs. PLS per acre.

Drainage Control Structures

The estimate for the reclamation of 56 acres of drainage control structures includes excavating diversion channels (164,909 c.y.), installing riprap (32,970 c.y.) for erosion protection (if necessary), seed bed preparation (if necessary), and seed application at a rate of 22.2 lbs. PLS per acre on 26 of the 56 acres (remaining acres are covered by riprap).

Growth Medium Stockpiles

Reclamation for the 75 acres of growth medium stockpiles includes seed bed preparation and seed application at a rate of 22.2 lbs. PLS per acre.

Demolition and Disposal

The cost estimate for demolition includes the demolition and removal of the office and shop buildings, associated structures and concrete pads and equipment. Disposal will include the burial of concrete foundation material and, if necessary, decontamination of material prior to placement into the designated and approved disposal facility.

Mobilization and Demobilization

The cost estimate for mobilization and demobilization includes transporting all equipment to and from the Trenton Canyon Project area. It is assumed that all equipment can be obtained from Reno, Nevada.

Revegetation Monitoring

The estimate for vegetation post reclamation monitoring is based on 50 hours per year for a duration of three years.

Exploration Activities

Reclamation costs for exploration activities include minor regrading (735,680 c.y.) and revegetation of disturbed areas. Approximately 456 acres of exploration activities are used in the estimation. Costs also include plugging of drill holes used for exploration purposes. For cost estimating purposes, exploration holes will be plugged on a monthly basis at a rate of 100 holes per month.

Provide a Reclamation Cost Estimate Submitted on NDEP Form or Equal

A cost breakdown for the reclamation of each mine unit is provided at the end of this section. A Summary Sheet for Mining Operations is provided in Table 2 and follows the outline as presented by the NDEP. The cost estimate detail sheets on the following table provide the basis of costs for specific stages of reclamation, and describe, as applicable, cumulative hourly rates for labor, equipment expense, equipment rental and materials. To ensure all activities and costs were included, the Reclamation Bond Checklist was followed in developing the cost estimate.

Production rates are based on the Caterpillar Equipment Handbook (latest edition) and modified with WELSH experience factors with mine reclamation projects in Nevada.

Table 1
Facility Acreage Used For Cost Estimate

Facility	Total Plan View Acreage	Plan View of Acreages		Acreages Used in Estimating Bond Costs	
		Flat	Sloped	Flat	Sloped[2]
Roads[1]	814	N/A	N/A	814	N/A
Berms	36[3]	N/A	N/A	20	N/A
Process Overflow Ponds	21	N/A	N/A	21	N/A
Heap Leach Facilities	203	72	131	72	141
Overburden Disposal Areas	680[4]	177	503	177	536
Ancillary Facilities	26	N/A	N/A	26	N/A
Water/Communication Line	10	N/A	N/A	10	N/A
Drainage Control	56[5]	N/A	N/A	26	N/A
Growth Medium Stockpiles	75	N/A	N/A	75	N/A
Exploration Activities	456	N/A	N/A	456	N/A

(1) The total road acres include the haul/access roads within the project boundary and the access road outside of the project boundary.

(2) The plan view of the sloped areas was adjusted to account for the actual area to be recontoured and revegetated.

(3) Total disturbance area for the berms is 36 acres; however, 16 acres will be covered by the rock berm. Therefore, only 20 acres will be revegetated.

(4) Total plan view acreage is greater than listed in the disturbance tables because a portion of overburden disposal area, TC-1, backfills a pit. The corresponding disturbance area is accounted for under open pits.

(5) Total disturbance area for diversion channels is 56 acres; however, 30 acres will be covered by riprap. Therefore, only 26 acres will be revegetated.

Table 2 Summary of Closure and Reclamation Costs

ITEM	Equip Costs	Labor Costs	Material Costs	Total Costs
A. Earthwork/Recontouring				
Haul Roads	$1,541,549	$605,723	–	$2,147,272
Access Roads	$417,536	$172,035	–	$589,571
Pit Berms	$37,892	$12,481	–	$50,372
Valmy Overburden	$871,691	$336,513	–	$1,208,204
North Peak Overburden	$217,018	$83,350	–	$300,368
Trenton Overburden	$1,994,717	$729,376	–	$2,724,093
Sec. 15 Heap Leach	$191,074	$80,997	–	$272,071
Sec. 21 Heap Leach	$254,471	$106,163	–	$362,634
Sec. 29 Heap Leach	$140,915	$59,354	–	$200,268
Process Ponds	$171,267	$74,750	–	$246,017
Ancillary Facilities	$50,565	$20,806	–	$71,371
Trout Creek Crossing	$234,362	$107,429	–	$341,791
Rock Catchment Berm	$17,348	$7,302	–	$24,650
Diversion Channels	$367,657	$147,705	–	$515,362
Water Communication Line	$16,927	$7,035	–	$23,962
Exploration Activities	$204,651	$76,894	$4,000	$285,546
subtotals	$6,729,640	$2,627,913	$4,000	$9,363,552
B. Revegetation/Stabilization				
Haul Roads	$69,437	$51,102	$105,317	$225,855
Access Roads	$25,878	$19,045	$39,250	$84,172
Pit Berms	$2,444	$1,776	$3,552	$7,773
Valmy Overburden	$43,905	$31,685	$49,663	$125,253
North Peak Overburden	$9,373	$6,763	$10,613	$26,748
Trenton Overburden	$49,471	$35,694	$55,572	$140,737
Sec. 15 Heap Leach	$9,903	$7,158	$11,364	$28,425
Sec. 21 Heap Leach	$12,815	$9,316	$15,786	$37,916
Sec. 29 Heap Leach	$7,171	$5,162	$7,837	$20,170
Process Ponds	$2,459	$1,810	$3,730	$7,998
Ancillary Facilities	$3,044	$2,241	$4,618	$9,903
Trout Creek Crossing	$1,639	$1,206	$2,486	$5,332
Rock Catchment Berm	$1,288	$948	$1,954	$4,190
Diversion Channels	$3,178	$2,309	$295,129	$300,616
Water Communication Line	$1,222	$888	$1,776	$3,886
Exploration Activities	$53,395	$39,296	$80,986	$173,676
Growth Medium Piles	$9,167	$6,661	$13,320	$29,148
H2O/Reveg. Monitoring	$800	$8,040	$18,600	$27,440
subtotals	$306,589	$231,100	$721,553	$1,259,238
C. Detoxification/Disposal				
Detoxification (see note)	$8,025	$3,953	$1,500	$13,478
subtotals	$8,025	$3,953	$1,500	$13,478
D. Structures, Equip. Removal				
Demolition	$195,312	$271,705	$1,320	$468,338
Mobilization	$53,947	$28,528	$1,000	$83,475
subtotals	$249,259	$300,233	$2,320	$551,813
TOTALS=A+B+C+D	$7,293,513	$3,163,199	$729,373	$11,188,081
INDIRECT COSTS				
E. Insurance 2%		$47,478		$47,478
F. Contract Admin. 10%	$729,351	$316,520	$72,937	$1,118,808
G. Bond (Perf. & Pay) 3%	$218,805	$94,956	$21,881	$335,642
H. Profit 10%	$729,351	$316,520	$72,937	$1,118,808
I. TOTAL INDIRECT COSTS	$1,677,507	$775,474	$167,755	$2,620,736
J. GRAND TOTALS	$8,971,020	$3,938,673	$897,128	$13,808,817
			COST/ACRE	$5,756

Existing Bond Amount = $3,650,952

Incremental Bond Increase Required= $10,157,865

Note: Costs for detoxification may be offset by anticipated gold recovery during rinsing. However for bonding, costs shown above have not been reduced for any gold recovery.

Appendix B

Nevada Division of Environmental Protection Publication

STATE OF NEVADA
BOB MILLER
Governor

PETER G. MORROS, Director

L.H. DODGION, *Administrator*

(702) 687-4670
TDD 687-4678

Administration
Mining Regulation and Reclamation
Water Pollution Control
Facsimile 687-5856

Waste Management
Corrective Actions
Federal Facilities
Facsimile 885-0868

Air Quality
Water Quality Planning
Facsimile 687-6396

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
333 W. Nye Lane, Room 138
Carson City, Nevada 89706-0866

MINING SITES

HYDROCARBON CONTAMINATED SOIL DEFINITIONS AND GUIDELINES

NRS 445.223 ALLOWS FOR THE ISSUANCE OF A "GENERAL PERMIT"

The Nevada Division of Environmental Protection's goal is to keep soil contaminated with hydrocarbons from degrading "Waters of the State".

Mining operations proposing the on-site treatment and/or disposal of hydrocarbon contaminated soil generated by the facility as a direct result of mining activities resulting from accidental spills or releases, or from pre-characterized sumps and oil/water separators, must apply for a **"general" or "individual" permit**. Issued permits will allow the operator to construct and manage a **Bioremediation Facility** for active treatment of non-hazardous soil contaminated by hydrocarbons from spills which have occurred during operations. Mine operators who do not apply for a "general" or "individual" permit to construct and manage a Bioremediation Facility cannot dispose of hydrocarbon contaminated soil on site. Those operations electing not to obtain a permit will have to dispose of these soils off-site in accordance with local, state and federal regulations.

Mining operations applying for a "general" or "individual" permit to operate a Bioremediation Facility on public lands must obtain approval from the applicable land management agency prior to construction and operation.

DEFINITIONS:

"Permitted Material" means, except as identified below, material contaminated with hydrocarbons related to mining activities, including soil contaminated with unforeseen releases or spills of hydrocarbons and hydrocarbon-contaminated material from sumps in maintenance buildings, vehicular wash areas and oil/water separators. Permitted Material also includes enhancement solutions or additives introduced to enhance bioremediation (e.g., water, nutrients and bacteria). Permitted Material does not include:

1. Liquid hydrocarbons;
2. Material defined as hazardous waste under 40 CFR 261.3 (1994);
3. Waste oil products that may practicably be recycled;
4. Material generated from sumps in a maintenance building or vehicular wash area or from an oil/water separator that has not passed a Toxicity Characteristic Leaching Procedure (TCLP, Method 1311) analysis, or has not been specified by the facility as having been generated from a characterized waste stream; or
5. Material that contains beneficiation process fluids, as defined by NAC 445.24252.

GENERAL PERMIT:

Mining operations applying for coverage under the **"general"** permit for the construction and management of a Bioremediation Facility, must submit an application (enclosed) to the Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation. The application must be accompanied by an application fee of two hundred dollars ($200.00), a complete description of the design and operation of the proposed facility which must be consistent with the minimum design criteria specific for Bioremediation Facilities, and a schedule of construction. An annual review and service fee of two hundred dollars ($200.00) will be due on or before July 1 of each year. Mine operations with an existing, active Bioremediation Facility must apply by September 1, 1995. New mine operations or those without an active Bioremediation Facility must obtain permit authorization before commencing hydrocarbon bioremediation activity. Upon approval of the application a letter of inclusion and authorization will be sent to the applicant.

To qualify for the general permit the operation must meet the following minimum design criteria:

1) Cell liners must meet the requirements of NAC 445.2437, Minimum design criteria: Liners.

2) A QA/QC plan must be provided with the permit application, and a QC report must be submitted within thirty (30) days after the completion of construction. For cells with a soil liner, the liner design plan, QA/QC plan and QC report must be prepared and submitted to NDEP by a professional engineer registered in Nevada.

3) Each cell must have a perimeter containment berm at least three (3) feet in height

with the liner extending over the crest of the berm. Synthetic liners must be securely anchored at the outer edge of the berm.

4) Cells must be sized so that their operation can be actively managed by the facility. In no case may the total surface area of an individual cell exceed twenty-five thousand (25,000) square feet.

INDIVIDUAL PERMIT:

To construct a Bioremediation Facility which does not meet the minimum design criteria, mining operations may apply for an **"individual"** permit. An application fee of two hundred fifty dollars ($250.00) is required and the annual review and service fee of five hundred dollars ($500.00) will be due on or before July 1 of each year. A complete application with design drawing, management plans, monitoring schedules and a clear demonstration that "Waters of the State" will not be degraded is required. Individual permits require a public notice and comment period and will require a review by the Bureau of Air Quality to determine if additional monitoring and/or permits may be required.

WILDLIFE NOTE:

If ponding of solution occurs on a regular basis, wildlife protective measures as prescribed by the Nevada Division of Wildlife must be implemented.

Version:1 (4/5/95)
j:\...\hydro2

State of Nevada

Department of Conservation and Natural Resources

Bureau of Mining Regulation and Reclamation

General Mining Bioremediation Facility Permit

AUTHORIZATION

In accordance with Nevada Revised Statutes (NRS) 445.223 "allowance for the issuance of a General Permit", the Nevada Division of Environmental Protection (Division) authorizes the permittee to construct, operate and close a Bioremediation Facility in accordance with the limitations, requirements and other conditions set forth in this permit.

The permittee must comply with all terms and conditions of this permit, and all applicable regulations.

This permit is based on the assumption that all the information provided by the permittee in the application is accurate and that the facility will be constructed and operated as specified in the application. Any inaccuracies found in this information may be grounds for revocation of the permittee's authorization to operate a Bioremediation Facility. The permittee must inform the Division of any deviation from or changes in the information in the application which may affect the permittee's ability to comply with the applicable regulations or permit conditions.

This permit is effective as of April 19, 1995, and shall remain for the life of the mine, unless modified, suspended or revoked.

Signed this 4th day of April, 1995.

Daniel L. Tecca EMS III

Daniel Tecca
Environmental Management Specialist
Bureau of Mining Regulation and Reclamation

1. Authorization.

This permit authorizes the permittee, in accordance with approved operating plans and facility designs, to:

a. Construct, operate and close a Bioremediation Facility in accordance with those design plans;

b. Contain within the system all applied enhancement solution as well as all meteoric waters which enter the system as a result of the 100-year, 24-hour storm event; and

c. Actively treat and/or dispose of Permitted Material, as defined in Mining Sites Hydrocarbon Contaminated Soil Definitions and Guidelines (dated 4/5/95), introduced to the Bioremediation Facility.

2. Limitations.

The following events may be considered a permit violation:

a. Introduction of a material other than a Permitted Material to the Bioremediation Facility;

b. Removal from a cell of material with a TPH (Total Petroleum Hydrocarbons, Method 8015 Modified) value greater than 100 mg/kg; or

c. Release of contaminants from the system that degrade waters of the state.

3. Monitoring.

A permittee is required to monitor the following items and keep records on site for the life of the mine:

a. A monthly record of the total volume of hydrocarbon contaminated material added to the Bioremediation Facility as well as the locations where the material originated;

b. A monthly record of the average temperature and precipitation;

c. A monthly record of additives introduced to enhance bioremediation (e.g., water, nutrients, bacteria, etc.);

d. A monthly total (in cubic yards) of the hydrocarbon contaminated material contained within the Bioremediation Facility; and

e. A monthly record of the volume of material removed from the Bioremediation Facility.

4. Sampling and Analysis Requirements.

The Division has the right to obtain a reasonable number of random representative samples from the Bioremediation Facility for TPH (Method 8015) analysis. These samples will be analyzed by a laboratory approved by the State of Nevada and the cost of the analysis will be covered by the mining operation.

A permittee is required to perform the following sampling protocol in accordance with each specific requirement:

a. A representative composite sample must be generated from each cell and submitted semi-annually for TPH (Method 8015) analysis;

b. An initial representative sample must be collected of any material generated by the permittee from locations other than unforeseen spills and releases (e.g., maintenance building sumps, vehicular wash area sumps, oil/water separators, etc.) These samples must be analyzed in accordance with the TCLP (Method 1311). If the waste stream generation has not changed since the initial TCLP then a facility may submit documentation verifying this in lieu of additional TCLP analysis; and

c. Following completion of the bioremediation process a representative composite sample must be collected from material anticipated to be removed from the system and analyzed for TPH (Method 8015) prior to removal.

5. Reporting Requirements.

a. The permittee is required to submit semi-annual reports, on or before July 28 and January 28 of each year, to the Division. These semi-annual reports will contain the following information generated during the six months prior to these dates:

1. Results from representative composite sample taken in accordance with Permit Part 4.a and Permit Part 4.c;

2. Analytical results of material added to the system in accordance

with Permit Part 4.b (e.g., materials generated from sumps in maintenance buildings, vehicular wash areas, and oil/water separators;

3. A record of the volume and origin of all Permitted Material added to the system; and

4. A record of the volume of treated materials removed from the system and a description of their disposition.

b. In addition to the information required above, the report submitted on January 28 shall contain:

1. A graphical representation of the average temperatures and precipitation for each month of the year;

2. A summary of the volume and dates when additives were introduced to the system during the year; and

3. The total volume (in cubic yards) of material added to and removed from the system during the year.

6. As-built Report.

Within thirty (30) days after construction of a bioremediation cell, the permittee is required to submit to the Division as-built documents and a QC report demonstrating that the facility has been constructed in accordance with guidelines and specifications. For cells with a soil liner, the QC report must be prepared by a professional engineer registered in Nevada.

7. Renewal of Permit.

This permit is life of mine permit and is not required to be renewed on a scheduled basis. An annual review and service fee of two hundred dollars ($200.00) is due on or before July 1 of each year.

8. Transfer of Permit.

A permittee may not transfer this permit to any other individual or company without written approval from the Division.

Nevada Division of Environmental Protection
Application for Inclusion in a General Permit
to construct and actively manage a Mining Operation
BIOREMEDIATION FACILITY

1) **Legal name and address of owner/operator**

____

____

____

____

Telephone Number (______)__________________

2) **Facility or project name, address, county, township, range and section(s)**

____

____

____

____

Telephone Number(______)__________________

3) **Location of BIOREMEDIATION FACILITY:**

Township____________ Range____________ Section(s)____________

4) **Land Status: Private____________ Public____________**

5) **Acreage to be disturbed________________**

6) **Size of facility: Cell Size (square feet)__________________**

Number of Cells________________________

I certify that I am familiar with the information provided in this application and that to the best of my knowledge the information is complete and accurate and that I have the authority to execute and sign this application.

________________________ Printed Name of Owner	________________________ Title of Signator
________________________ Legal Signature	________________________ Date of Signing

Completed application form, application fee and supporting information must be filed at the following office:

Bureau of Mining Regulation and Reclamation
Division of Environmental Protection
333 W. Nye Lane
Carson City, Nevada 89706-0866

Appendix C

Proposed Reclamation Seed Species

Appendix C
Proposed Reclamation Seed Species

Species	Origin	Seeds/lb.	Seeds/ft.^{2}	Lbs. PLS/A*
Seed Mixture for Flat Surfaces				
Bluebunch wheatgrass *Agropyron spicatum*	Native	140,000	10	3.0
Western wheatgrass *Agropyron smithii*	Native	115,000	6	2.3
Sandberg bluegrass *Poa secunda*[a]	Native	925,000	6	0.3
Basin wildrye *Elymus cinereus*	Native	115,000	4	1.2
Indian ricegrass *Oryzopsis hymenoides*[a]	Native	162,000	3	4.0
Gooseberryleaf globemallow *Sphaeralcea grossulariaefolia*	Native	500,000	3	4.0
Northern sweetvetch *Hedysarum boreale*	Native	264,000	3	0.5
Palmer penstemon *Penstemon palmeri*	Native	600,000	4	0.3
Western yarrow *Achillea lanulosa*	Native	600,000	3	0.3
Lewis flax *Linum lewisii*	Native	60,000	3	2.0
Small burnet *Sanguisorba minor*	Introduced	55,000	5	4.0
Big sagebrush *Artemisis tridentata wyomingensis*[a]	Native	2,500,000	17	0.3
Fourwing saltbush *Atriplex canescens*[a]	Native	55,000	5	4.0
Winterfat *Ceratoides lanata*[a]	Native	330,000	5	0.7
Antelope bitterbrush *Purshia tridentata*	Native	20,000	1	2.2

Appendix C
Proposed Reclamation Seed Species

Species	Origin	Seeds/lb.	Seeds/ft.^{2}	Lbs. PLS/A*
Seed Mixture for South and West Facing Slopes				
Bluebunch wheatgrass *Agropyron spicatum*	Native	140,000	16	5.0
Thickspike wheatgrass *Agropyron dasystachyum*	Native	150,000	12	3.5
Western wheatgrass *Agropyron smithii*	Native	115,000	9	3.4
Sandberg bluegrass *Poa secunda*[a]	Native	925,000	8	0.4
Basin wildrye *Elymus cinereus*	Native	140,000	7	2.2
Indian ricegrass *Oryzopsis hymenoides*[a]	Native	162,000	5	1.3
Gooseberryleaf globemallow *Sphaeralcea grossulariaefolia*	Native	500,000	9	0.4
Northern sweetvetch *Hedysarum boreale*	Native	264,000	5	0.8
Palmer penstemon *Penstemon palmeri*	Native	600,000	8	0.4
Small burnet *Sanguisorba minor*	Introduced	55,000	7	5.5
Winterfat *Ceratoides lanata*[a]	Native	330,000	7	0.9
Big sagebrush *Artemisis tridentata wyomingensis*[a]	Native	2,500,000	15	0.3
Fourwing saltbush *Atriplex canescens*[a]	Native	55,000	7	5.7

Appendix C
Proposed Reclamation Seed Species

Species	Origin	Seeds/lb.	Seeds/ft.^{2}	Lbs. PLS/A*
Seed Mixture for North and East Facing Slopes				
Bluebunch wheatgrass *Agropyron spicatum*	Native	140,000	16	5.0
Slender wheatgrass *Agropyron trachycaulum*	Native	135,000	7	0.4
Western wheatgrass *Agropyron smithii*	Native	115,000	4	0.4
Lewis flax *Linum lewisii*	Native	60,000	4	3.0
Sandberg bluegrass *Poa secunda*[a]	Native	925,000	4	0.4
Streambank wheatgrass *Agropyron rparium*	Native	160,000	6	1.6
Western yarrow *Achillea lanulosa*	Native	600,000	7	0.6
Gooseberryleaf globemallow *Sphaeralcea grossulariaefolia*	Native	500,000	6	0.4
Northern sweetvetch *Hedysarum boreale*	Native	264,000	6	1.6
Palmer penstemon *Penstemon palmeri*	Native	600,000	6	0.4
Small burnet *Sanguisorba minor*	Introduced	55,000	6	4.7
Big sagebrush *Artemisis tridentata wyomingensis*[a]	Native	2,500,000	15	0.4
Fourwing saltbrush *Atriplex canescens*[a]	Native	55,000	6	0.4
Winterfat *Ceratoides lanata*[a]	Native	330,000	7	0.9
Antelope bitterbrush *Purshia tridentata*	Native	20,000	1	2.2

Appendix C
Proposed Reclamation Seed Species

Species	Origin	Seeds/lb.	Seeds/ft.^{2}	Lbs. PLS/A*
Seed Mixture for Growth Medium Stockpiles				
Crested Wheatgrass *Agropyron cristatum*[a,b]	Introduced	--	--	5.0
Intermediate Wheatgrass *Agropyron intermedium*[b]	Introduced	--	--	5.0
Slender Wheatgrass *Agropyron trachycalum*	Native	--	--	5.0
Ladak Alfalfa *Medicago sativa*[b]	Introduced	--	--	5.0
Seed Mixture for Lower Elevations				
Crested Wheatgrass *Agropyron cristatum*[a,b]	Introduced	--	--	3.0
Sandberg bluegrass *Poa secunda*[a]	Native	--	--	1.0
Indian ricegrass *Oryzopsis hymenoides*[a]	Native	--	--	2.0
Wyoming Big Sagebrush *Artemisis tridentata,* subspecies *wyomingensis*	Native	--	--	1.0
Fourwing saltbrush *Atriplex canescens*[a]	Native	--	--	3.0
Winterfat *Ceratoides lanata*[a]	Native	--	--	1.0
Shadscale saltbush *Atriplex confertifolia*[a]	Native	--	--	3.0

[a] Drought tolerant species for lower elevations

[b] Species to be used to vegetate growth medium stockpiles

Adapted from pages 37-41 of the Plan of Operations, Appendix C - Reclamation Plan Modification, October 1997.

Source: Shepherd Miller, Inc. 1997.

Appendix D

Air Quality Data

Appendix D
Air Quality Data

Trenton Canyon Project
Air Emissions Inventory for Current Approved Operations

POTENTIAL EMISSION SUMMARY

Pollutant	Tons/yr
TSP	157.86
PM_{10}	67.84
SOx	16.30
NOx	151.03
CO	42.19
VOC	22.31

INDIVIDUAL SOURCE SUMMARY (in tons per year)

Sources Included	TSP	PM_{10}	SOx	NOx	CO	VOC
Drilling- Fugitive	2.43	1.09				
Blasting - Fugitive	1.88	0.84				
Ore and Waste Loading - Fugitive	65.00	29.25				
Haul Roads - Material Haul Trucks - Fugitive	36.03	10.81				
Haul Roads - Other Vehicles - Fugitive	0.41	0.12				
Unloading Waste to Disposal Area - Fugitive	7.27	3.44				
Waste Dump Wind Erosion - Fugitive	1.64	0.74				
Wind Erosion of Exposed Areas - Fugitive	31.32	14.08				
Loading to lime silo - Point	1.18	1.18				
Unloading lime from silo - Fugitive	0.88	0.88				
Tail-pipe emissions from mobile sources -Mobile	9.83	5.40	16.30	151.03	42.19	22.31
Total	157.86	67.84	16.30	151.03	42.19	22.31

Appendix D
Air Quality Data

Wet Drilling

Tons of material drilled per year: 13,000,000 tons/year

Emission Factor
Reference: Table 11.19.2-2, AP-42, Fifth Edn.

TSP emission factor: 0.000373 lb/ton
PM_{10} emission factor: 0.000168 lb/ton
Multiply the TSP emission factor by the particle size multiplier ratio of 0.36/0.80 for PM_{10}/TSP (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

Controlled TSP emissions: 2.43 tons/year
Controlled PM_{10} emissions: 1.09 tons/year

Blasting

Emission Factor

Pounds of TSP emissions per blast: 50 lb/blast
Reference: 1996 NMA Memorandum

Pounds of PM_{10} emissions per blast: 22.5 lb/blast
Multiply the TSP emission factor by the particle size multiplier ratio of 0.36/0.80 for PM_{10}/TSP (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

Maximum number of blasts per year: 75 blasts/year

TSP emissions: 1.88 tons/year
PM_{10} emissions: 0.84 tons/year

Appendix D
Air Quality Data

Ore and Waste Loading

Amount of ore and waste loaded per year: 13,000,000 tons/year

Uncontrolled TSP emission Factor for material removal and dumping: 0.02 lb/ton
(Reference: 1996 NMA Memorandum)

Note: State of Wyoming DAQ recommends a factor of 0.003 lb/ton for material removal and 0.017 lb/ton for dumping which matches the emission factor used above.

Control efficiency: 50%
(Consistent with WDEQ/DAQ guidelines for wet suppression)
Controlled TSP emission factor for material removal and dumping: 0.01 lb/ton
Controlled PM_{10} emission factor for material removal and dumping: 0.0045 lb/ton
Multiply the TSP emission factor by the particle size multiplier ratio of 0.36/0.80 for PM_{10}/TSP (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

TSP emissions from ore and waste loading: 65.00 tons/year
PM_{10} emissions from ore and waste loading: 29.25

Appendix D
Air Quality Data

Haul Roads - Material Haul Trucks

Formula for Emission Factors
Reference: WDEQ/DAQ Memo, January, 1979

TSP, lb/VMT $(0.81)(s)((S/30)^2)((365-w)/365)(T)(0.62)$
(Note: State of Wyoming DAQ recommends $(S/30)^2$ for speeds less than 30 mph)

WHERE
s is the silt content based on sieve analysis: 8
S is the speed of trucks, miles/hour: refer table below
T is the Tire correction factor: 2.5
W is the mean number of days per year with ppt>0.01": 77

Control techniques used for unpaved haul roads:

Average Control Efficiency, C (%) = 100 -((0.8)(p)(d)(t / i))
(Reference: Control of open fugitive dust sources: EPA-450/3-88-008)
p = potential average hourly daytime evaporation rate, mm/hr: 0.66
(based on 50" evap. rate/yr for 8 months, 30 days/month, 8 hrs/day)
d = average daytime traffic rate per hour 11
(based max. trips/yr in above table and 12 hrs/day, 365 days/yr)
i = application intensity, liters/sq. meter: 1
t = time between applications, h: 2
(hours corresponding to the number of consecutive days without precipitation)

Percent Control: 87.95%

	miles/round trip	speed mph	tons trucked/yr	trips/year (150tons/trip)	miles/year or VMT[1]/yr	Uncont. TSP EF[2] lb/VMT	Controlled TSP	Controlled PM_{10}[3]
North pk. ore	3	16	3,000,000	20,000	60,000	2.25	8.15	2.45
North pk. waste	2.5	18	7,500,000	50,000	125,000	2.85	21.50	6.45
Valmy ore	–	–	–	–	–			
Valmy waste	2	19	2,500,000	16,667	33,333	3.18	6.39	1.92
		Total:	13,000,000	86,667	218,333		36.03	10.81

[1] VMT = Vehicle Miles Traveled
[2] EF = Emission Factor
[3] $PM_{10}/TSP = 0.3$

Haul Roads - Other Vehicles
(management oversight, personnel transportation, exchange of equipment, receiving supplies, engineering, grade control support, maintenance support)

Formula for Emission Factors
Reference: WDEQ/DAQ Memo, January, 1979

TSP, lb/VMT (0.81)(s)(S/30)((365-w)/365)(T)(0.62)

Where
s is the silt content based on sieve analysis: 8
S is the speed of trucks, miles/hour: 35
T is the Tire correction factor: 2.5
W is the mean number of days per year with ppt>0.01": 77

Control techniques used for unpaved haul roads:

Average Control Efficiency, C (%) = 100 -((0.8)(p)(d)(t / i))
(Reference: Control of open fugitive dust sources: EPA-450/3-88-008)
p = potential average hourly daytime evaporation rate, mm/hr: 0.66
(based on 50" evap. rate/yr for 8 months, 30 days/month, 8 hrs/day)
d = average daytime traffic rate per hour 2
(based max. trips/yr in above table and 12 hrs/day, 365 days/yr)
i = application intensity, liters/sq. meter: 0.5
t = time between applications, h: 2
(hours corresponding to the number of consecutive days without precipitation)

Percent Control 95.60%

The road may alternatively be chemically treated to suppress particulate matter emissions,
Chemical treatment will be at least as efficient as the efficiency calculated above for water treatment

	miles/round trip	speed mph	trips/year	miles/year or VMT^1/yr	Uncont. TSP EF^2 lb/VMT	Controlled TSP	Controlled PM$_{10}$^{3}
Other Vehicles	28	35	6,250	175,000	9.25	0.41	0.12

^{1} VMT = Vehicle Miles Traveled
^{2}EF = Emission Factor
^{3}PM$_{10}$/TSP = 0.3

Appendix D
Air Quality Data

Unloading Ore and Waste

Total amount of ore and waste unloaded:	13,000,000 tons/year

Emission Factor Calculation
Reference: AP-42 Fifth Edn.
Section 13 Miscellaneous Sources
13.2 Fugitive Dust Sources
13.2.3 Aggregate handling and storage piles

$TSP=(k)(0.0032)((U/5)^{1.3})/((M/2)^{1.4})$
$PM_{10}=(k')(0.0032)((U/5)^{1.3})/((M/2)^{1.4})$

Where

k=Particle size multiplier for TSP	0.74
k'=Particle size multiplier for PM_{10}	0.35
U=Mean wind speed (mph)	9 from site Met Station
M=Average material moisture content (wt%)	5.9

Emission Facors

TSP	0.001118 lbs/ton
PM_{10}	0.000529 lbs/ton

Emissions

TSP	7.27 tons/year
PM_{10}	3.44 tons/year

Waste Dump Wind Erosion

Emission Factor Calculation

EF for TSP = k (1.7) (s/5) (d/235) (f/15) lb/acre-day
Reference: AP-42 Fifth Edition

where:

k, the particle size multiplier for TSP:	0.8
k, the particle size multiplier for PM_{10}:	0.36
s is the % silt content of the waste rock:	0.65 %
d is the number of dry days per year < 0.01" ppt per day:	285 days
f is the % time wind speed exceeds 12 mph:	6.3 %

Emission Factor

TSP Emission Factor:	0.09 lb/acre-day
PM_{10} Emission Factor:	0.04 lb/acre-day
Avg. number of acres of stockpile exposed prior to revegetation:	100 acres
Number of days stockpile will be exposed per year:	365 days/year

Emissions

TSP emissions:	1.64 tons per year
PM_{10} emissions:	0.74 tons per year

Wind Erosion of Exposed Areas

Emission Factor
Reference: AP-42, Fifth edition, Table 11.9-4

TSP Emission Factor: 0.38 tons/acre-year
PM_{10} Emission Factor: 0.17 tons/acre-year
For TSP emissions, multiply the PM_{10} emissions by the particle size multiplier ratio of 0.80/0.36 for TSP/PM_{10} (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

Total number of acres of area disturbed prior to revegetation: 100 acres
(includes areas for haul roads, exploration, etc.)
Number of acres controlled by wet suppression: 20 acres
Number of acres not controlled by wet suppression: 80 acres

Emissions from disturbed areas controlled by wet suppression
(e.g., haul roads)
Control efficiency: 87.95%
(from the control efficiency calculated for haul roads)

TSP emissions: 0.92 tons per year
PM_{10} emissions: 0.41 tons per year

Emissions from disturbed areas not controlled by wet suppression

TSP emissions: 30.40 tons per year
PM_{10} emissions: 13.68 tons per year

Total emissions from disturbed areas

TSP emissions: 31.32 tons per year
PM_{10} emissions: 14.09 tons per year

Loading to Lime Silo

Total amount of material loaded in the silo per year: 87,600 tons/year

Uncontrolled (bin vent filter) Emission Factor for TSP and PM_{10}: 0.27 lb/ton
Reference: AP-42 Fifth Edition, Table 11.12-2, similar to cement loading

Percent control for bin vent: 90%

TSP Emissions: 1.18 tons/year
PM_{10} Emissions: 1.18 tons/year

Unloading from Lime Silo

Uncontrolled TSP emission Factor for material removal and dumping: 0.02 lb/ton
(Reference: 1996 NMA Memorandum)

Amount of lime unloaded from silo: 87,600 tons/year

Emissions

TSP Emissions: 0.88 tons/year
PM_{10} Emissions: 0.88 tons/year
(Assume conservatively that all TSP is PM_{10} for lime unloading)

Appendix D
Air Quality Data

Tail-pipe Emissions from Mobile Sources

Includes tail-pipe emissions from off-road mobile sources including loaders, trucks, graders, dozers, R/T, and water trucks

Total hours of operation per year for each mobile equipment: (2-10 hr shifts/day, 5 days/week, 50 weeks/year)	5,000 hours/year

Equipment Type	Number	Total hrs per year
Loaders	1	5,000
Trucks	5	25,000
Graders	1	5,000
Dozers	1	5,000
R/T	1	5,000
Water trucks	1	5,000
		50,000

Emission Factors g/hp-hr
(Reference: Volume II: Mobile Sources Table II-7.1)

Equipment Type	TSP	PM_{10}[1]	SOx	NOx	CO	VOC
Loaders	0.805	0.443	0.857	8.810	2.710	0.970
Trucks	0.502	0.276	0.887	8.150	2.280	0.370
Graders	0.625	0.344	0.874	7.140	1.540	0.360
Tracked Dozers	0.411	0.226	0.867	8.150	2.280	0.370
R/T Dozers	0.411	0.226	0.867	8.150	2.280	0.370
Water trucks[2]	0.335	0.184	0.591	5.433	1.520	0.247

[1] PM_{10}/TSP ratio = 0.55

[2] Water trucks have a rating of 800 hp compared to a rating of 1,200 hp for off-highway trucks. Therefore, the emissions in lb/hr for water trucks is 2/3 of the emissions for off-highway trucks.

Equipment Type	Horse Power
Loaders	1,000
Trucks	1,200
Graders	600
Tracked Dozers	600
R/T Dozers	600
Water trucks	800

Load factor: 0.36

Emissions Tons/year

Equipment Type	TSP	PM_{10}[1]	SOx	NOx	CO	VOC
Loaders	1.60	0.88	1.70	17.48	5.38	5.35
Trucks	5.98	3.29	10.56	97.02	27.14	12.24
Graders	0.74	0.41	1.04	8.50	1.83	1.19
Tracked Dozers	0.49	0.27	1.03	9.70	2.71	1.22
R/T Dozers	0.49	0.27	1.03	9.70	2.71	1.22
Water trucks	0.53	0.29	0.94	8.62	2.41	1.09
Total	9.83	5.40	16.30	151.03	42.19	22.31

Trenton Canyon Project
Air Emissions Inventory for Proposed Operations

POTENTIAL EMISSION SUMMARY

Pollutant	Tons/yr
TSP	239.88
PM10	103.99
SOx	32.61
NOx	302.07
CO	84.39
VOC	44.61

INDIVIDUAL SOURCE SUMMARY (in tons per year)

Sources Included	TSP	PM10	SOx	NOx	CO	VOC
Drilling- Fugitive	3.73	1.68				
Blasting - Fugitive	3.75	1.69				
Ore and Waste Loading - Fugitive	100.00	45.00				
Haul Roads - Material Haul Trucks - Fugitive	55.72	16.72				
Haul Roads - Other Vehicles - Fugitive	0.57	0.17				
Unloading Waste to Disposal Area - Fugitive	11.18	5.29				
Waste Dump Wind Erosion - Fugitive	9.86	4.44				
Wind Erosion of Exposed Areas - Fugitive	31.29	14.08				
Loading to lime silo - Point	2.37	2.37				
Unloading lime from silo - Fugitive	1.75	1.75				
Tail-pipe emissions from mobile sources -Mobile	19.65	10.81	32.61	302.07	84.39	44.61
Total	239.88	103.99	32.61	302.07	84.39	44.61

Wet Drilling

Tons of material drilled per year: 20,000,000 tons/year

Emission Factor
Reference: Table 11.19.2-2, AP-42, Fifth Edn.

TSP emission factor: 0.000373 lb/ton
PM_{10} emission factor: 0.000168 lb/ton
Multiply the TSP emission factor by the particle size multiplier ratio of 0.36/0.80 for PM_{10}/TSP (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

Controlled TSP emissions: 3.73 tons/year
Controlled PM_{10} emissions: 1.68 tons/year

Blasting

Emission Factor

Pounds of TSP emissions per blast: 50 lb/blast
Reference: 1996 NMA Memorandum

Pounds of PM_{10} emissions per blast: 22.5 lb/blast
Multiply the TSP emission factor by the particle size multiplier ratio of 0.36/0.80 for PM_{10}/TSP (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

Maximum number of blasts per year: 150 blasts/year

TSP emissions: 3.75 tons/year
PM_{10} emissions: 1.69 tons/year

Ore and Waste Loading

Amount of ore and waste loaded per year:	20,000,000 tons/year
Uncontrolled TSP emission Factor for material removal and dumping: (Reference: 1996 NMA Memorandum)	0.02 lb/ton

Note: State of Wyoming DAQ recommends a factor of 0.003 lb/ton for material removal and 0.017 lb/ton for dumping which matches the emission factor used above.

Control efficiency: (Consistent with WDEQ/DAQ guidelines for wet suppression)	50%
Controlled TSP emission factor for material removal and dumping:	0.01 lb/ton
Controlled PM_{10} emission factor for material removal and dumping:	0.0045 lb/ton

Multiply the TSP emission factor by the particle size multiplier ratio of 0.36/0.80 for PM_{10}/TSP (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM_{10} = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

TSP emissions from ore and waste loading:	100.00 tons/year
PM_{10} emissions from ore and waste loading:	45.00

Haul Roads - Material Haul Trucks

Formula for Emission Factors
Reference: WDEQ/DAQ Memo, January, 1979

TSP, lb/VMT $(0.81)s(S/30)^2((365\text{-}w)/365)(T)(0.62)$
(Note: State of Wyoming DAQ recommends $(S/30)^2$ for speeds less than 30 mph)

WHERE

s is the silt content based on sieve analysis:	8
S is the speed of trucks, miles/hour:	refer table below
T is the Tire correction factor:	2.5
W is the mean number of days per year with ppt>0.01":	77

Control techniques used for unpaved haul roads:

Average Control Efficiency, C (%) = 100 -((0.8)(p)(d)(t / i))
(Reference: Control of open fugitive dust sources: EPA-450/3-88-008)
p = potential average hourly daytime evaporation rate, mm/hr: 0.66
(based on 50" evap. rate/yr for 8 months, 30 days/month, 8 hrs/day)
d = average daytime traffic rate per hour 11
(based max. trips/yr in above table and 12 hrs/day, 365 days/yr)
i = application intensity, liters/sq. meter: 1
t = time between applications, h: 2
(hours corresponding to the number of consecutive days without precipitation)

Percent Control: 88.23%

	miles/round trip	speed mph	tons trucked/yr	trips/year (150tons/trip)	miles/year or VMT[1]/yr	Uncont. TSP EF[2] lb/VMT	Controlled TSP	Controlled PM_{10}[3]
Valmy Ore	5	14	1,930,000	12,867	64,333	1.73	6.53	1.96
Valmy Waste	2	19	7,320,000	48,800	97,600	3.18	18.25	5.48
Trenton Ore	8	13	1,900,000	12,667	101,333	1.49	8.87	2.66
Trenton Waste	2	19	8,850,000	59,000	118,000	3.18	22.07	6.62
		Total:	20,000,000	133,333	381,267		55.72	16.72

[1] VMT = Vehicle Miles Traveled
[2] EF = Emission Factor
[3] PM_{10}/TSP = 0.3

Haul Roads - Other Vehicles

(management oversight, personnel transportation, exchange of equipment, receiving supplies, engineering, grade control support, maintenance support)

Formula for Emission Factors

Reference: WDEQ/DAQ Memo, January, 1979

TSP, lb/VMT (0.81)(s)(S/30)((365-w)/365)(T)(0.62)

Where:

s is the silt content based on sieve analysis:	8
S is the speed of trucks, miles/hour:	35
T is the Tire correction factor:	2.5
W is the mean number of days per year with ppt>0.01":	77

Control techniques used for unpaved haul roads:

Average Control Efficiency, C (%) = 100 - ((0.8)(p)(d)(t / i))

(Reference: Control of open fugitive dust sources: EPA-450/3-88-008)

p = potential average hourly daytime evaporation rate, mm/hr: (based on 50" evap. rate/yr for 8 months, 30 days/month, 8 hrs/day)	0.66
d = average daytime traffic rate per hour (based max. trips/yr in above table and 12 hrs/day, 365 days/yr)	3
i = application intensity, liters/sq. meter:	0.5
t = time between applications, h: (hours corresponding to the number of consecutive days without precipitation)	2

Percent Control 93.84%

The road may be alternatively be chemically treated to suppress particulate matter emissions,

Chemical treatment will be at least as efficient as the efficiency calculated above for water treatment

	miles/round trip	speed mph	trips/year	miles/year or VMT/yr	Uncont. TSP EF[1] lb/VMT[2]	Controlled TSP	Controlled PM_{10}[3]
Other Vehicles	28	35	8,750	245,000	9.25	0.57	0.17

[1] EF = Emission Factor

[2] VMT = Vehicle Miles Traveled

[3] PM_{10}/TSP = 0.3

Unloading Ore and Waste

Total amount of ore and waste unloaded:	20,000,000 tons/year

Emission Factor Calculation
Reference: AP-42 Fifth Edn.
Section 13 Miscellaneous Sources
13.2 Fugitive Dust Sources
13.2.3 Aggregate handling and storage piles

$TSP=((k)(0.0032))((U/5)^{1.3})/((M/2)^{1.4})$
$PM10=((k')(0.0032))((U/5)^{1.3})/((M/2)^{1.4})$

Where

k=Particle size multiplier for TSP	0.74
k'=Particle size multiplier for PM_{10}	0.35
U=Mean wind speed (mph)	9 for Lonetree Mine
M=Average material moisture content (wt%)	5.9

Emission Facors

TSP	0.001118 lbs/ton
PM_{10}	0.000529 lbs/ton

Emissions

TSP	11.18 tons/year
PM_{10}	5.29 tons/year

Waste Dump Wind Erosion

Emission Factor Calculation

EF for TSP = k (1.7) (s/5) (d/235) (f/15) lb/acre-day
Reference: AP-42 Fifth Edition

Where

k, the particle size multiplier for TSP:	0.8
k, the particle size multiplier for PM_{10}:	0.36
s is the % silt content of the waste rock:	0.65 %
d is the number of dry days per year < 0.01" ppt per day:	285 days
f is the % time wind speed exceeds 12 mph:	6.3 %

Emission Factor

TSP Emission Factor:	0.09 lb/acre-day
PM_{10} Emission Factor:	0.04 lb/acre-day
Avg. number of acres of stockpile exposed prior to revegetation:	600 acres
Number of days stockpile will be exposed per year:	365 days/year

Emissions

TSP emissions:	9.86 tons per year
PM_{10} emissions:	4.44 tons per year

Wind Erosion of Exposed Areas

Emission Factor
Reference: AP-42, Fifth edition, Table 11.9-4

TSP Emission Factor: 0.38 tons/acre-year
PM$_{10}$ Emission Factor: 0.17 tons/acre-year
For TSP emissions, multiply the PM$_{10}$ emissions by the particle size multiplier ratio of 0.80/0.36 for TSP/PM$_{10}$ (pg. 13.2.2-3, AP-42, Fifth Edn.)
TSP/PM$_{10}$ = 0.80/0.36 = 2.22, which is close to 2.1 as recommended in footnote 'c' under Table 11.19.2-2, AP-42, Fifth Edn.

Total number of acres of area disturbed prior to revegetation: 100 acres
(includes areas for haul roads, exploration, etc.)
Number of acres controlled by wet suppression: 20 acres
Number of acres not controlled by wet suppression: 80 acres

Emissions from disturbed areas controlled by wet suppression
(e.g., haul roads)
Control efficiency: 88.23%
(from the control efficiency calculated for haul roads)

TSP emissions: 0.89 tons per year
PM$_{10}$ emissions: 0.40 tons per year

Emissions from disturbed areas not controlled by wet suppression

TSP emissions: 30.40 tons per year
PM$_{10}$ emissions: 13.68 tons per year

Total emissions from disturbed areas

TSP emissions: 31.29 tons per year
PM$_{10}$ emissions: 14.08 tons per year

Loading to Lime Silos

Total amount of material loaded in the silos per year: 175,200 tons/year

Uncontrolled (bin vent filter) Emission Factor for TSP and PM$_{10}$ 0.27 lb/ton
Reference: AP-42 Fifth Edition, Table 11.12-2, similar to cement loading

Percent control for bin vent: 90%

TSP Emissions: 2.37 tons/year
PM$_{10}$ Emissions: 2.37 tons/year

Unloading from Lime Silos

Uncontrolled TSP emission Factor for material removal and dumping: 0.02 lb/ton
(Reference: 1996 NMA Memorandum)

Amount of lime unloaded from silos: 175,200 tons/year

Emissions

TSP Emissions: 1.75 tons/year
PM$_{10}$ Emissions: 1.75 tons/year
(Assume conservatively that all TSP is PM$_{10}$ for lime unloading)

Appendix D
Air Quality Data

Tail-pipe Emissions from Mobile Sources

Includes tail-pipe emissions from off-road mobile sources including loaders, trucks, graders, dozers, R/T, and water trucks

Total hours of operation per year for each mobile equipment: (2-10 hr shifts/day, 5 days/week, 50 weeks/year)	5,000 hours/year

Equipment Type	Number	Total hrs per year
Loaders	2	10,000
Trucks	10	50,000
Graders	2	10,000
Dozers	2	10,000
Rubber tired dozers	2	10,000
Water trucks	2	10,000
		100,000

Emission Factors g/hp-hr
(Reference: Volume II: Mobile Sources Table II-7.1)

Equip. Type	TSP	PM$_{10}$[1]	SOx	NOx	CO	VOC
Loaders	0.805	0.443	0.857	8.810	2.710	0.970
Trucks	0.502	0.276	0.887	8.150	2.280	0.370
Graders	0.625	0.344	0.874	7.140	1.540	0.360
Tracked Dozers	0.411	0.226	0.867	8.150	2.280	0.370
R/T Dozers	0.411	0.226	0.867	8.150	2.280	0.370
Water trucks[2]	0.335	0.184	0.591	5.433	1.520	0.247

[1] PM$_{10}$/TSP ratio = 0.55

[2] Water trucks have a rating of 800 hp compared to a rating of 1,200 hp for off-highway trucks. Therefore, the emissions in lb/hr for water trucks is 2/3 of the emissions for off-highway trucks.

Equip. Type	Horse Power
Loaders	1,000
Trucks	1,200
Graders	600
Tracked Dozers	600
R/T Dozers	600
Water trucks	800

Load factor: 0.36

Emissions Tons/year

Equip. Type	TSP	PM$_{10}$[3]	SOx	NOx	CO	VOC
Loaders	3.19	1.76	3.40	34.96	10.75	10.69
Trucks	11.95	6.57	21.12	194.05	54.29	24.47
Graders	1.49	0.82	2.08	17.00	3.67	2.38
Tracked Dozers	0.98	0.54	2.06	19.40	5.43	2.45
R/T Dozers	0.98	0.54	2.06	19.40	5.43	2.45
Water trucks	1.06	0.58	1.88	17.25	4.83	2.18
Total	19.65	10.81	32.61	302.07	84.39	44.61

[3] PM$_{10}$/TSP ratio = 0.55

Trenton Canyon Project
Comparison of Present Approved vs. Proposed Operations

Comparison of Emission Units for Existing vs. Proposed

Emission Units	Existing	Proposed	Increase
Drilling- Fugitive, tons/year	13,000,000	20,000,000	7,000,000
Blasting - Fugitive, blasts/year	75	150	75
Ore and Waste Loading - Fugitive, tons/year	13,000,000	20,000,000	7,000,000
Haul Roads - Material Haul Trucks - Fugitive, tons/year	13,000,000	20,000,000	7,000,000
Haul Roads - Material Haul Trucks - Fugitive, VMT/year	218,333	381,267	162,933
Haul Roads - Other Vehicles - Fugitive, VMT/year	175,000	245,000	70,000
Unloading Waste to Disposal Area - Fugitive, tons/year	13,000,000	20,000,000	7,000,000
Waste Dump Wind Erosion - Fugitive, acres	100	600	500
Wind Erosion of Exposed Areas - Fugitive, acres	100	100	0
Loading to lime silo - Point, tons/year	87,600	175,200	87,600
Unloading lime from silo - Fugitive, tons/year	87,600	175,200	87,600
Tail-pipe emissions from mobile sources -Mobile, hrs/year	50,000	100,000	50,000

Trenton Canyon Project
Emissions Comparison for Present Approved vs. Proposed Operations

Point Source Emissions

Pollutant	Present	Proposed	Increase
TSP	1.18	2.37	1.18
PM_{10}	1.18	2.37	1.18

Fugitive Source Emissions

Pollutant	Present	Proposed	Increase
TSP	146.85	237.52	90.67
PM_{10}	61.25	90.81	29.56

Mobile Source Emissions

Pollutant	Present	Proposed	Increase
TSP	9.83	19.65	9.83
PM_{10}	5.40	10.81	5.40
SOx	16.30	32.61	16.30
NOx	151.03	302.07	151.03
CO	42.19	84.39	42.19
VOC	22.31	44.61	22.31

Individual Source Summary for PM_{10} Emissions, TPY

Emission Units	Existing	Proposed	Increase
Drilling- Fugitive	1.09	1.68	0.59
Blasting - Fugitive	0.84	1.69	0.84
Ore and Waste Loading - Fugitive	29.25	45.00	15.75
Haul Roads - Material Haul Trucks - Fugitive	10.81	16.72	5.91
Haul Roads - Other Vehicles - Fugitive	0.12	0.17	0.05
Unloading Waste to Disposal Area - Fugitive	3.44	5.29	1.85
Waste Dump Wind Erosion - Fugitive	0.74	4.44	3.70
Wind Erosion of Exposed Areas - Fugitive	14.08	14.08	0.00
Loading to lime silo - Point	1.18	2.37	1.18
Unloading lime from silo - Fugitive	0.88	1.75	0.88
Tail-pipe emissions from mobile sources -Mobile	5.40	10.81	5.40
Total	67.84	103.99	36.15

Appendix E

Baseline Hydrology Data

Appendix E Summary of Surface, Spring and Ground Water Quality Data, Trenton Canyon Project. (Page 1 of 9)

Sample Location[c]	No. of Observ.	Type	Date	pH	TDS (mg/l)	TSS (mg/l)	Alkalinity (as $CaCO_3$) (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Nitrate-N (mg/l)	Sulfate (mg/l)	Total Phosphorus (mg/l)	Aluminum (mg/l)		Antimony [a,b] (mg/l)		Arsenic (mg/l)	
								Total	Total	Total	Total	Total	Diss	Total	Diss	Total	Diss	Total
Surface Water Samples																		
Surface Water Standard:				7.0-9.0	500	80	130	250	1.0	10.0	250				0.146		0.05	
Trout Creek Drainage																		
TRS-00	1	Surface	5/22/95	7.98	184	122	81.3	12.0	0.3	0.05	24.3	0.31	0.111	4.17	<0.018	<0.018	0.003	0.003
TRS-1A	1	Surface	2/28/95	8.25	314	4.4	153	24.6	0.39	NA	85.1	0.120	<0.015	0.751	<0.024	<0.024	0.007	0.007
TRS-01	1	Surface	9/10/95	8.23	259	7.9	156	26.5	0.4	<0.02	48.5	0.17	<0.008	0.107	<0.018	<0.018	0.006	0.006
TRS-02	3	Surface	Mean	7.56	215	19.2	135	18.1	0.3	NA	41.7	0.14	NA	0.734	NA	NA	0.004	0.004
			Range	7.35-7.84	158-259	1.3-54	78.8-173	12-22.4	0.3-0.3	<0.02-0.08	23.1-59.4	0.11-0.19	<0.008-0.109	0.047-2.01	<0.001-<0.01	<0.018-0.001	0.002-0.005	0.003-0.005
TRS-03	5	Spring	Mean	7.55	288	1.0	144	26.3	0.4	NA	55.6	0.07	NA	NA	NA	NA	0.008	NA
			Range	7.24-7.70	214-332	0.9-1.2	107-178	14.5-40.0	0.3-0.05	<0.02-0.31	34.3-81.6	0.05-0.09	<0.008-0.012	NA	<0.001-<0.02	NA	0.005-0.013	NA
Cottonwood Creek Drainage																		
CCS-00	2	Surface	3/04/95	8.09	171	3.2	112	12.0	0.23	NA	45.6	0.1	<0.015	0.180	<0.024	<0.024	0.0140	0.0150
CCS-00			5/19/95	8.22	149	10.6	78.1	9.5	0.3	0.29	15.8	0.1	0.091	0.568	<0.018[a]	<0.018	0.012	0.013
CCS-0A	1	Surface	5/19/95	8.2	135	11.9	78.6	9.4	0.2	0.13	16	0.1	0.078	0.965	<0.018	<0.018	0.014	0.013
CCS-01	1	Surface	10/24/94	7.5	326	<5	128	50	0.3	0.35	45	0.123	<0.05	<0.05	<0.005[a]	<0.005	0.023	0.027
CCS-1A	6	Surface	Mean	7.79	193	NA	115	11.4	0.2	NA	34.7	0.11	NA	NA	NA	NA	0.02	0.019
			Range	7.30-8.12	149-250	<0.1-3.9	75.6-143	9.3-13.2	0.2-0.3	<0.02-0.30	15.2-47.0	0.09-0.13	<0.008-0.099	<0.008-0.424	<0.001-<0.02	<0.001-0.019	0.012-0.023	0.012-0.023
CCS-2A	1	Surface	5/21/95	7.91	151	3.4	53.7	9.4	0.1	0.24	12.4	0.12	0.026	0.099	<0.018	+	0.007	0.007
CCS-03	5	Surface	Mean	7.89	213	NA	125	11.1	0.3	NA	35.9	0.10	NA	NA	NA	NA	0.022	0.023
			Range	7.70-8.09	175-270	<0.1-10	76.6-154	9.2-12.4	0.2-0.3	<0.02-0.41	15.3-47.0	0.07-0.15	<0.008-0.093	<0.03-0.526	<0.002-<0.02	<0.002-<0.02	0.010-0.034	0.008-0.033
CCS-04	5	Surface	Mean	7.83	187	NA	121	10.7	0.2	NA	31.7	0.09	NA	NA	NA	NA	0.016	0.017
			Range	7.60-8.10	135-250	<0.1-13.7	75.8-146	9.0-12.0	0.2-0.3	<0.02-0.35	14.8-46.2	0.06-0.11	<0.008-0.13	<0.021-0.841	<0.001-<0.02	<0.001-<0.02	0.006-0.024	0.006-0.024
CCS-4A (64-46)	5	Spring	Mean	7.76	183	NA	107	9.84	0.2	NA	28.1	0.27	NA	0.200	NA	NA	0.029	0.032
			Range	7.46-7.95	131-251	<0.1-11.8	79.9-132	9.0-11.3	0.2	<0.02-0.02	19.9-37.7	0.05-0.15	<0.015-0.057	0.061-0.041	<0.018-0.003	<0.018-0.002	0.026-0.036	0.028-0.035
CCS-05	6	Surface	Mean	7.56	196	12.8	119	11.8	0.3	NA	32.2	0.10	NA	NA	NA	NA	NA	NA
			Range	6.99-8.10	144-280	0.9-33.6	87.9-156	9.7-14.0	0.2-0.3	<0.02-0.10	18.1-52.4	0.07-0.12	<0.015-0.097	<0.03-0.634	<0.001-<0.02	<0.001-<0.02	<0.002-0.017	<0.002-0.015
CCS-06	6	Surface	Mean	7.38	177	NA	107	9.4	0.2	NA	22.8	0.10	NA	NA	NA	NA	0.015	0.014
			Range	6.90-7.88	134-240	<0.1-13	58.3-130	7.8-12.1	0.1-0.3	<0.02-0.82	9.6-31.0	0.05-0.13	<0.008-0.146	<0.015-0.961	<0.001-<0.02	<0.001-<0.02	0.009-0.021	0.008-0.019
CCS-07	4	Surface	Mean	7.79	186	NA	108	12.4	0.2	NA	25.8	0.7	NA	0.188	NA	NA	NA	NA
			Range	7.50-8.07	155-204	<0.1-5.1	89.6-124	9.7-15.2	0.1-0.4	<0.02-0.36	15.6-39.0	0.02-0.10	<0.021-0.106	0.070-0.405	<0.001-<0.01	<0.001-<0.01	<0.001-0.001	<0.001-<0.00
CCS-09	4	Surface	Mean	6.89	108	NA	58.2	6.7	0.1	NA	9.4	0.09	0.100	0.960	NA	NA	0.004	NA
			Range	6.70-7.06	76-167	<0.1-3.1	39.8-70.5	4.5-7.6	0.1-0.2	<0.02-0.99	7.4-10.3	0.4-0.12	0.020-0.206	0.279-2.59	<0.001-<0.01	<0.001-<0.01	0.003-0.004	<0.002-0.005
CCS-10	1	Surface	3/06/95	7.31	63	6.9	33.2	3.60	0.13	NA	6.33	0.11	0.227	2.98	<0.024	<0.024	0.0030	0.0060

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				Barium (mg/l)		Calcium (mg/l)	Copper (mg/l)		Iron (mg/l)		Lead (mg/l)		Magnesium (mg/l)	Manganese (mg/l)	
Sample Location[c]	No. of Observ.	Type	Date	Diss	Total	Diss	Diss	Total	Diss	Total	Diss	Total	Diss	Diss	Total
Surface Water Samples															
Surface Water Standard:				2.0			0.0		1		0.001			0.20	
Trout Creek Drainage															
TRS-00	1	Surface	5/22/95	0.040	0.110	20.8	<0.003	0.005	<0.017	3.95	<0.001	0.003	6.87	0.005	0.130
TRS-1A	1	Surface	2/28/95	0.0709	0.0795	53.5	<0.008	0.0037	<0.006	0.682	<0.001	0.001	17.9	0.0045	0.0243
TRS-01	1	Surface	9/10/95	0.075	0.083	46.2	<0.003	<0.003	<0.017	0.166	<0.001	<0.001	14.7	0.001	0.007
TRS-02	3	Surface	Mean	0.080	0.090	36.9	NA	NA	NA	0.724	NA	NA	12.5	0.018	0.041
			Range	0.041-0.107	0.068-0.105	20.3-48.7	<0.003	<0.003	<0.017-0.028	0.135-1.82	<0.001	<0.001-0.002	6.72-16.9	0.005-0.028	0.025-0.067
TRS-03	5	Spring	Mean	0.06	NA	48.1	NA	NA	NA	NA	NA	NA	15.5	NA	NA
			Range	0.04-0.07	NA	30.8-54.7	<0.003-<0.01	NA	<0.006-<0.02	NA	<0.001	NA	10.3-18.8	<0.001-<0.01	NA
Cottonwood Creek Drainage															
CCS-00	2	Surface	3/04/95	0.109	0.107	39.4	<0.002	<0.002	<0.006	0.165	<0.001	<0.001	10.5	<0.002	0.0024
CCS-00			5/19/95	0.081	0.085	21.3	<0.003	0.004	0.045	0.43	<0.001	<0.001	5.51	0.001	0.011
CCS-0A	1	Surface	5/19/95	0.080	0.093	21.7	<0.003	<0.003	0.036	0.755	<0.001	<0.001	5.55	0.001	0.02
CCS-01	1	Surface	10/24/94	0.12	0.13	54	<0.01	<0.01	<0.02	<0.02	<0.001	<0.005	14	<0.01	<0.01
CCS-1A	6	Surface	Mean	0.108	0.11	35	NA	NA	NA	0.15	NA	NA	9.14	NA	NA
			Range	0.083-0.136	0.085-0.133	20.9-42.8	<0.002-0.003	<0.002-0.007	<0.01-0.056	0.020-0.366	<0.001	<0.001	5.3-11.0	<0.001-0.003	<0.001-0.01
CCS-2A	1	Surface	5/21/95	0.092	0.087	11.3	<0.003	<0.003	<0.017	0.119	0.001	<0.001	3.05	0.001	0.001
CCS-03	5	Surface	Mean	0.114	0.110	40.1	NA	NA	NA	0.13	NA	NA	10.2	NA	NA
			Range	0.088-0.130	0.090-0.122	21.1-50.0	<0.002-<0.01	<0.002-<0.01	<0.01-0.046	0.020-0.417	<0.001-0.003	<0.001-0.002	5.4-13.0	<0.001-0.003	<0.001-0.012
CCS-04	5	Surface	Mean	0.115	0.121	37.8	NA	NA	NA	0.181	NA	NA	9.12	NA	NA
			Range	0.091-0.140	0.100-0.140	20.8-46.0	<0.002-0.026	<0.002-<0.01	<0.006-0.063	0.020-0.608	<0.001	<0.001	5.26-11.0	<0.001-0.008	<0.001-0.016
CCS-4A	5	Spring	Mean	0.104	0.099	35.3	NA	NA	NA	0.224	NA	NA	7.51	0.002	0.005
(64-46)			Range	0.078-0.132	0.075-0.134	25.6-44.4	<0.002-0.003	<0.002-0.004	<0.017-0.039	0.116-0.326	<0.001	<0.001	5.57-9.41	0.002-0.003	0.002-0.011
CCS-05	6	Surface	Mean	0.101	0.117	36.6	NA	NA	NA	NA	NA	NA	9.79	NA	NA
			Range	0.017-0.14	0.087-0.136	24.3-49.1	<0.002-0.004	<0.002-<0.01	<0.006-0.072	<0.01-0.57	<0.001-0.001	<0.001-0.002	6.42-13.7	<0.002-0.017	<0.005-2
CCS-06	6	Surface	Mean	0.124	0.124	32.8	NA	NA	NA	NA	NA	NA	6.60	NA	NA
			Range	0.102-0.148	0.111-0.141	15.4-40.0	<0.002-<0.01	<0.002-<0.01	<0.006-0.076	<0.01-0.62	<0.001-0.002	<0.001-0.002	3.21-9.30	<0.001-0.003	<0.001-0.013
CCS-07	4	Surface	Mean	0.119	0.124	29.9	NA	NA	NA	0.208	NA	NA	9.42	0.016	0.023
			Range	0.080-0.157	0.090-0.157	24.7-35.0	<0.003-<0.01	<0.003-<0.01	<0.024-0.055	0.092-0.324	<0.001-0.001	<0.001-0.002	6.31-12.0	0.005-0.030	0.010-0.030
CCS-09	4	Surface	Mean	0.140	0.142	12.5	NA	NA	0.044	0.600	NA	NA	3.64	NA	0.010
			Range	0.102-0.159	0.114-0.163	8.6-14.2	<0.003-0.005	<0.003-0.005	0.023-0.074	0.190-1.62	<0.001-0.001	<0.001-0.002	2.59-4.19	<0.001-0.004	0.002-0.023
CCS-10	1	Surface	3/06/95	0.0838	0.104	7.19	<0.002	<0.002	0.0920	**1.98**	<0.001	0.0020	2.14	0.0035	0.0239

Appendix E Summary of Surface, Spring and Ground Water Quality Data, Trenton Canyon Project. (Page 3 of 9)

				Mercury (mg/l)		Molybdenum (mg/l)		Nickel (mg/l)		Potassium (mg/l)	Selenium (mg/l)		Silica (mg/l)	Sodium (mg/l)	Strontium (mg/l)	
Sample Location[c]	No. of Observ.	Type	Date	Diss	Total	Diss	Total	Diss	Total	Diss	Diss	Total	Diss	Diss	Diss	Total
Surface Water Samples																
Surface Water Standard:				0.000012		0.019		0.0134			0.005					
Trout Creek Drainage																
TRS-00	1	Surface	5/22/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	1.98	<0.001	<0.001	22.4	19.1	0.118	0.133
TRS-1A	1	Surface	2/28/95	<0.0002	<0.0002	<0.008	<0.008	<0.01	<0.01	3.63	0.001	<0.001	26.5	32.0	0.254	0.233
TRS-01	1	Surface	9/10/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	3.47	<0.001	<0.001	31.5	29.4	0.235	0.247
TRS-02	3	Surface	Mean	NA	NA	NA	NA	NA	NA	2.99	NA	NA	27.6	27.0	0.199	0.192
			Range	<0.002	<0.002	<0.006-<0.008	<0.006-<0.008	<0.005-<0.02	<0.005-<0.02	1.99-4.0	<0.001	<0.001	22.6-30.9	19.0-32.6	0.117-0.265	0.114-0.261
TRS-03	5	Spring	Mean	NA	NA	0.009	NA	NA	NA	2.89	NA	NA	28.7	27.2	0.23	NA
			Range	<0.0002	NA	<0.006-0.009	NA	<0.005-<0.02	NA	2.39-3.16	<0.001-0.002	NA	25.6-33.4	22.1-30.0	0.15-0.27	NA
Cottonwood Creek Drainage																
CCS-00	2	Surface	3/04/95	<0.0002	<0.0002	<0.008	<0.008	<0.01	<0.01	2.37	0.0020	0.0010	25.4	21.0	0.187	0.173
CCS-00			5/19/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	1.94	<0.001	<0.001	26.8	15.9	0.109	0.104
CCS-0A	1	Surface	5/19/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	2.0	<0.001	<0.001	25.7	15.9	0.11	0.105
CCS-01	1	Surface	10/24/94	<0.0002	<0.0002	<0.01	<0.01	<0.02	<0.02	3.0	0.001	0.002	29.5	23	0.24	0.23
CCS-1A	6	Surface	Mean	NA	NA	NA	NA	NA	NA	2.64	NA	NA	28.2	21.2	0.167	0.16
			Range	<0.002	<0.002	<0.006-<0.014	<0.006-<0.014	<0.005-<0.01	<0.005-<0.01	1.79-3.64	<0.001-0.002	<0.001-0.00	25.3-33.2	15.9-26.0	0.108-0.200	0.101-0.200
CCS-2A	1	Surface	5/21/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	2.26	<0.001	<0.001	28.3	18.2	0.097	0.09
CCS-03	5	Surface	Mean	NA	NA	NA	NA	NA	NA	2.7	NA	NA	27.4	19.3	0.176	0.17
			Range	<0.0002	<0.0002	<0.008-<0.01	<0.008-<0.01	<0.005-<0.02	<0.005-<0.01	1.62-3.28	<0.001-0.001	<0.001-0.00	25.6-30.1	15.5-21.1	0.110-0.200	0.105-0.200
CCS-04	5	Surface	Mean	NA	NA	NA	NA	NA	NA	2.62	NA	NA	27.2	19	0.171	0.169
			Range	<0.0002	<0.0002	<0.006-<0.01	<0.006-<0.01	<0.005-<0.02	<0.005-<0.02	1.84-3.10	<0.001-0.002	<0.001-0.00	25.3-28.0	15.7-21.1	0.111-0.200	0.106-0.194
CCS-4A	5	Spring	Mean	NA	NA	NA	NA	NA	NA	2.20	NA	NA	25.4	16.5	0.149	0.135
(64-46)			Range	<0.0002	<0.0002	<0.006-<0.014	<0.006-<0.014	<0.005-<0.02	<0.005-<0.02	1.52-2.52	<0.001-0.002	<0.001-0.00	23.8-27.2	13.8-19.5	0.112-0.189	0.103-0.175
CCS-05	6	Surface	Mean	NA	NA	NA	NA	NA	NA	2.63	NA	NA	27.1	20.4	0.175	0.172
			Range	<0.0002	<0.0002	<0.006-<0.014	<0.006-<0.014	<0.005-<0.02	<0.005-<0.02	1.95-3.10	<0.001-0.002	<0.001-0.00	26.4-28.8	16.4-26.0	0.120-0.238	0.115-0.238
CCS-06	6	Surface	Mean	NA	NA	NA	NA	NA	NA	2.32	NA	NA	26.9	18.1	0.158	0.149
			Range	<0.0002	<0.0002	<0.006-<0.014	<0.006-<0.014	<0.005-<0.02	<0.005-<0.02	1.80-3.00	<0.001-0.004	<0.001-0.00	24.2-29.4	14.0-20.0	0.094-0.180	0.090-0.180
CCS-07	4	Surface	Mean	NA	NA	NA	NA	NA	NA	1.96	NA	NA	24	19.1	0.149	0.150
			Range	<0.0002	<0.0002	<0.006-<0.01	<0.006-<0.01	<0.005-<0.02	<0.005-<0.02	1.11-2.60	<0.001	<0.001	17-28	16.0-22.9	0.120-0.188	0.119-0.182
CCS-09	4	Surface	Mean	NA	NA	NA	NA	NA	NA	1.24	NA	NA	30.0	16.4	0.112	0.110
			Range	<0.0002	<0.0002	<0.006-<0.008	<0.006-<0.007	<0.005-<0.02	<0.005-<0.02	0.91-1.49	<0.001	<0.001	28.9-30.8	13.2-18.4	0.080-0.130	0.078-0.127
CCS-10	1	Surface	3/06/95	<0.0002	<0.0002	<0.008	<0.008	<0.01	<0.01	0.74	<0.001	<0.001	25.3	10.7	0.0658	0.0646

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				Thallium ^{b} (mg/l)		Vanadium (mg/l)		Zinc (mg/l)	
Sample Location ^{c}	No. of Observ.	Type	Date	Diss	Total	Diss	Total	Diss	Total
Surface Water Samples									
		Surface Water Standard:		0.013				0.123	
Trout Creek Drainage									
TRS-00	1	Surface	5/22/95	<0.040	<0.040	<0.003	0.01	0.004	0.052
TRS-1A	1	Surface	2/28/95	0.053 ^{b}	<0.040	<0.003	0.0041	<0.004	0.009
TRS-01	1	Surface	9/10/95	<0.001	<0.001	<0.003	<0.003	<0.002	0.004
TRS-02	3	Surface	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001	<0.001	<0.003-0.005	<0.003-0.004	<0.002-0.008	<0.002-0.045
TRS-03	5	Spring	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-0.046	NA	<0.003-0.005	NA	<0.002-0.004	NA
Cottonwood Creek Drainage									
CCS-00	2	Surface	3/04/95	<0.040	0.041	<0.003	<0.003	<0.004	0.0105
CCS-00			5/19/95	<0.040	<0.040	0.004	0.006	<0.002	<0.002
CCS-0A	1	Surface	5/19/95	<0.040	<0.040	<0.003	0.004	<0.002	<0.002
CCS-01	1	Surface	10/24/94	<0.002	<0.002	<0.01	<0.01	<0.01	<0.01
CCS-1A	6	Surface	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-<0.040	<0.001-<0.040	<0.003-0.004	<0.003-0.005	<0.002-0.139	<0.002-0.032
CCS-2A	1	Surface	5/21/95	<0.040	<0.040	<0.003	0.004	<0.002	<0.002
CCS-03	5	Surface	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-0.044	<0.001-<0.040	<0.003-0.005	<0.003-0.005	<0.002-0.011	<0.002-0.020
CCS-04	5	Surface	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-<0.040	<0.001-<0.040	<0.003-0.003	<0.003-0.005	<0.002-<0.01	<0.002-0.003
CCS-4A	5	Spring	Mean	NA	NA	NA	NA	NA	NA
(64-46)			Range	<0.001-0.001	<0.001-0.001	<0.003-<0.00	<0.003-0.004	<0.002-0.002	<0.002-0.011
CCS-05	6	Surface	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-<0.040	<0.001-0.046	<0.03-0.004	<0.003-0.005	<0.002-0.007	<0.002-0.005
CCS-06	6	Surface	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-<0.040	<0.001-0.001	<0.003-0.005	<0.003-0.005	<0.002-0.006	<0.002-0.010
CCS-07	4	Surface	Mean	NA	NA	NA	NA	NA	0.012
			Range	<0.001-<0.040	<0.001-<0.040	<0.004-0.005	<0.003-<0.00	<0.002-0.01	0.003-0.024
CCS-09	4	Surface	Mean	NA	NA	NA	NA	NA	0.014
			Range	<0.001-<0.040	<0.001-0.061	<0.003-0.005	<0.003-0.005	<0.002-0.015	0.003-0.039
CCS-10	1	Surface	3/06/95	<0.040	0.049	<0.003	0.0043	0.0093	0.0088

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Sample Location[c]	No. of Observ.	Type	Date	pH	TDS (mg/l)	TSS (mg/l)	Alkalinity (as $CaCO_3$) (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Nitrate-N (mg/l)	Sulfate (mg/l)	Total Phosphorus (mg/l)	Aluminum (mg/l)		Antimony [a,b] (mg/l)		Arsenic (mg/l)	
								Total	Total	Total	Total	Total	Diss	Total	Diss	Total	Diss	Total
Surface Water Samples																		
			Surface Water Standard:	**7.0-9.0**	**500**	**80**	**130**	**250**	**1.0**	**10.0**	**250**				**0.146**		**0.05**	
CCS-13	1	Surface	5/20/95	7.97	156	54.7	56	8.0	0.1	0.95	9.3	0.15	0.132	3.27	0.02[a]	0.02	0.002	0.002
CCS-14	1	Surface	5/20/95	8.04	156	38.5	54.5	7.8	0.1	1.21	9.7	0.15	0.173	1.6	<0.018	<0.018	0.003	0.003
CCS-15	1	Surface	5/20/95	7.56	157	15.6	57.2	8.2	0.1	0.6	9.3	0.13	0.149	1.97	<0.018	<0.018	<0.002	<0.002
CCS-16	1	Spring	5/20/95	**6.78**	125	3.6	33.4	5.9	<0.1	0.65	7.0	0.07	0.125	NA	0.028[a,b]	NA	0.002	NA
CCS-17	1	Surface	5/20/95	7.79	164	3.5	53.4	8.3	0.1	2.34	11.4	0.11	0.056	0.425	0.02[a]	0.02	0.003	0.004
CCS-18	1	Surface	5/21/95	7.69	104	3.5	40.5	5.3	0.1	1.12	7.5	0.08	0.051	0.087	0.019[a]	0.019	0.004	0.004
CCS-19	1	Surface	5/21/95	7.99	141	0.9	49.3	7.2	0.1	0.77	8.7	0.12	0.042	0.100	<0.018[a]	<0.018	0.003	0.002
CCS-20	1	Spring	5/23/95	7.35	109	44	44	6.9	0.2	0.76	8.7	0.16	0.024	NA	<0.018	NA	0.004	NA
CCS-21	1	Spring	5/23/95	7.12	139	6	49.8	9.3	<0.1	0.68	10.6	0.19	0.05	NA	<0.018	NA	0.016	NA
Trenton Canyon Drainage																		
TCS-01	5	Spring	Mean	7.59	287	NA	**158**	45.2	0.2	NA	50.3	NA	NA	NA	NA	NA	0.039	NA
			Range	7.31-7.95	261-322	<0.1-12	152-165	21.0-138	0.2	<0.02-0.35	43.0-52.9	<0.01-0.04	<0.008-<0.02	NA	<0.018-0.004	NA	0.022-0.045	NA
TCS-02	5	Surface	Mean	7.93	311	NA	**154**	19.7	0.3	NA	66.5	NA	NA	NA	NA	NA	0.016	0.015
			Range	7.71-8.05	219-426	<0.1-5	105-180	12.0-25.0	0.3-0.4	<0.02-0.08	35.0-93.0	<0.01-0.04	<0.008-<0.02	<0.050-0.192	<0.001-0.002	<0.001-0.002	0.011-0.020	0.013-0.017
Valmy Deposit Area																		
MSS-01	6	Spring	Mean	**6.98**	156	NA	69.4	20.3	0.2	NA	22.3	0.30	NA	0.15	NA	NA	0.005	0.005
Mud Spg.			Range	6.62-7.24	114-249	<0.1-43.9	63.5-73.0	11.0-54.5	0.2-0.3	<0.02-0.56	10.0-48.5	0.24-0.49	<0.021-0.080	0.043-0.250	<0.001-<0.02	<0.001-<0.02	0.002-0.007	0.003-0.006
(64-16)																		
ASS-01	6	Spring	Mean	**6.74**	189	332	65.2	28.2	0.2	NA	31.5	0.95	NA	2.83	NA	NA	0.004	0.004
(Ames)			Range	6.64-6.87	148-240	1.8-832	55.0-80.0	14.5-42.6	0.1-0.4	<0.02-0.35	19.7-46.3	0.18-2.63	<0.015-0.085	0.10-5.60	<0.001-<0.02	<0.002-<0.02	0.002-0.008	0.004
Ground Water Samples																		
			Ground Water Standard:	**6.5-8.5**	**500**			**250**	**2.0**		**250**		**0.2**					
MW-1	1	Well	12/16/95	7.33	180	167	143	11.5	0.1	< 0.02	29.8	0.41	<0.021	**2.18**	0.001	0.002	0.031	**0.062**
MW-3	1	Well	12/16/95	7.10	236	2.1	115	8.1	0.4	< 0.02	56.4	0.73	0.033	NA	**0.341**	NA	**1.34**	NA
CCRPW	5	Well	Mean	7.30	225	NA	123	22.0	0.3	0.16	35.5	0.67	NA	NA	NA	NA	0.024	NA
			Range	6.30-8.10	208-250	<0.5-<5	118-139	19.3-27.7	0.2-0.3	0.15-0.18	30.0-41.6	0.14-1.42	<0.008-0.011	NA	<0.018-0.029	NA	0.014-0.034	NA

Appendix E Summary of Surface, Spring and Ground Water Quality Data, Trenton Canyon Project. (Page 6 of 9)

Sample Location[c]	No. of Observ.	Type	Date	Barium (mg/l) Diss	Barium (mg/l) Total	Calcium (mg/l) Diss	Copper (mg/l) Diss	Copper (mg/l) Total	Iron (mg/l) Diss	Iron (mg/l) Total	Lead (mg/l) Diss	Lead (mg/l) Total	Magnesium (mg/l) Diss	Manganese (mg/l) Diss	Manganese (mg/l) Total
Surface Water Samples															
Surface Water Standard:				**2.0**			**0.0**		**1**		**0.001**			**0.20**	
CCS-13	1	Surface	5/20/95	0.118	0.189	12.9	<0.003	0.006	0.066	**2.52**	0.001	0.002	3.44	0.007	0.066
CCS-14	1	Surface	5/20/95	0.119	0.146	12.7	<0.003	<0.003	0.077	**1.21**	0.001	0.002	3.52	0.011	0.037
CCS-15	1	Surface	5/20/95	0.118	0.152	13.0	0.003	0.004	0.089	**1.43**	<0.001	<0.001	3.47	0.007	0.037
CCS-16	1	Spring	5/20/95	0.085	NA	8.34	0.005	NA	0.057	NA	<0.001	NA	2.35	0.002	NA
CCS-17	1	Surface	5/20/95	0.133	0.134	13.6	<0.003	<0.003	0.02	0.314	<0.001	<0.001	4.01	0.002	0.005
CCS-18	1	Surface	5/21/95	0.082	0.082	11.1	<0.003	<0.003	0.035	0.051	**0.002**	<0.001	2.51	0.003	<0.001
CCS-19	1	Surface	5/21/95	0.087	0.087	13.6	<0.003	<0.003	0.023	0.087	**0.002**	<0.001	2.92	0.002	0.001
CCS-20	1	Spring	5/23/95	0.068	NA	10.7	<0.003	NA	<0.017	NA	<0.001	NA	2.42	0.001	NA
CCS-21	1	Spring	5/23/95	0.083	NA	11	<0.003	NA	<0.017	NA	<0.001	NA	3.04	0.003	NA
Trenton Canyon Drainage															
TCS-01	5	Spring	Mean	0.042	NA	60.9	NA	NA	NA	NA	NA	NA	11.7	NA	NA
			Range	0.035-0.046	NA	58.4-63.3	<0.003-0.002	NA	<0.006-<0.02	NA	<0.001	NA	11.3-12.2	<0.001-0.002	NA
TCS-02	5	Surface	Mean	0.034	0.035	61.9	NA	NA	NA	0.175	NA	NA	11.5	0.013	0.026
			Range	0.021-0.050	0.020-0.050	36.2-81.0	<0.003-0.003	<0.003-0.003	<0.006-<0.02	0.036-0.332	<0.001	<0.001	6.8-15.0	0.004-0.030	0.010-0.040
Valmy Deposit Area															
MSS-01	6	Spring	Mean	0.074	0.061	14.3	NA	NA	NA	0.147	NA	NA	3.14	NA	NA
Mud Spg.			Range	0.060-0.121	0.0555-0.069	12.2-22.7	<0.003-0.003	<0.002-<0.01	<0.024-0.110	0.067-0.210	<0.001-0.002	<0.001	2.60-5.06	<0.001-0.018	<0.005-0.006
(64-16)															
ASS-01	6	Spring	Mean	0.086	0.102	15.6	NA	NA	0.058	1.69	NA	NA	3.61	0.021	0.03
(Ames)			Range	0.070-0.113	0.067-0.130	13.1-19.3	<0.002-<0.01	<0.003-0.003	0.011-0.128	0.12-2.90	<0.001	<0.001-0.002	2.87-4.42	0.003-0.050	0.004-0.070
Ground Water Samples															
Ground Water Standard:									**0.3**				**150**	**0.05**	
MW-1	1	Well	12/16/95	0.077	0.435	49.5	0.004	0.03	<0.024	**5.22**	0.001	0.008	8.02	**0.091**	**0.177**
MW-3	1	Well	12/16/95	0.054	NA	45.2	< 0.003	NA	**2.51**	NA	<0.001	NA	12.3	**0.518**	NA
CCRPW	5	Well	Mean	0.490	NA	38.5	NA	NA	0.179	NA	NA	NA	9.87	0.007	NA
			Range	0.034-0.069	NA	37.0-41.7	<0.002-<0.01	NA	0.032-0.271	NA	<0.001	NA	9.43-10.2	0.002-0.013	NA

Appendix E Summary of Surface, Spring and Ground Water Quality Data, Trenton Canyon Project. (Page 7 of 9)

				Mercury (mg/l)		Molybdenum (mg/l)		Nickel (mg/l)		Potassium (mg/l)	Selenium (mg/l)		Silica (mg/l)	Sodium (mg/l)	Strontium (mg/l)	
Sample Location^c	No. of Observ.	Type	Date	Diss	Total	Diss	Total	Diss	Total	Diss	Diss	Total	Diss	Diss	Diss	Total
Surface Water Samples																
		Surface Water Standard:		0.000012		0.019		0.0134			0.005					
CCS-13	1	Surface	5/20/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	1.78	<0.001	<0.001	30.8	15.0	0.108	0.111
CCS-14	1	Surface	5/20/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	1.75	<0.001	<0.001	29.7	15.3	0.11	0.109
CCS-15	1	Surface	5/20/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	2.31	<0.001	<0.001	33.2	14.8	0.111	0.112
CCS-16	1	Spring	5/20/95	<0.0002	NA	<0.006	NA	<0.021	NA	0.87	<0.001	NA	25.8	9.26	0.073	NA
CCS-17	1	Surface	5/20/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	1.31	<0.001	<0.001	29	16.4	0.12	0.115
CCS-18	1	Surface	5/21/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	1.3	<0.001	<0.001	23.3	9.89	0.064	0.06
CCS-19	1	Surface	5/21/95	<0.0002	<0.0002	<0.006	<0.006	<0.021	<0.021	2.0	<0.001	<0.001	26.8	12.3	0.083	0.079
CCS-20	1	Spring	5/23/95	<0.0002	NA	<0.006	NA	<0.021	NA	1.33	<0.001	NA	27.4	13.3	0.068	NA
CCS-21	1	Spring	5/23/95	<0.0002	NA	<0.006	NA	<0.021	NA	1.75	<0.001	NA	22.7	16.3	0.089	NA
Trenton Canyon Drainage																
TCS-01	5	Spring	Mean	NA	NA	NA	NA	NA	NA	NA	0.006	NA	28.9	25.6	NA	NA
			Range	<0.0002	NA	<0.006-0.013	NA	<0.005-<0.02	NA	<0.76-1.34	0.003-0.007	NA	26.5-30.8	24.0-27.0	<0.16-0.165	NA
TCS-02	5	Surface	Mean	NA	NA	0.070	0.069	NA	NA	NA	NA	NA	34.4	27.4	0.191	0.188
			Range	<0.0002	<0.0002	<0.050-0.079	0.050-0.081	<0.005-<0.02	<0.005-<0.02	<0.76-2.0	<0.001-0.005	<0.001-0.00	31.3-38.3	19.8-33.0	0.118-0.240	0.115-0.240
Valmy Deposit Area																
MSS-01	6	Spring	Mean	NA	NA	NA	NA	NA	NA	2.13	NA	NA	25.6	33.8	0.109	0.091
Mud Spg.			Range	<0.0002	<0.0002	<0.006-<0.014	<0.006-<0.014	<0.005-<0.02	<0.005-<0.01	1.69-3.09	<0.001	<0.001-0.00	24.0-28.2	28.8-53.4	0.090-0.168	0.837-0.096
(64-16)																
ASS-01	6	Spring	Mean	NA	NA	NA	NA	NA	NA	NA	NA	NA	26.0	37.8	0.124	0.111
(Ames)			Range	<0.0002-0.000	<0.0002	<0.006-0.01	<0.006-<0.01	<0.005-<0.02	<0.01-<0.021	<0.076-4.45	<0.001-0.003	<0.001-0.00	24.4-28.0	29.6-43.9	0.099-0.155	0.092-0.140
Ground Water Samples																
		Ground Water Standard:														
MW-1	1	Well	12/16/95	<0.0002	<0.0002	<0.014	<0.014	0.006	**0.018**	1.81	**0.015**	**0.012**	25.4	18.3	0.144	0.155
MW-3	1	Well	12/16/95	<0.0002	NA	0.419	NA	**0.019**	NA	4.26	<0.001	NA	19	11.8	0.11	NA
CCRPW	5	Well	Mean	NA	NA	NA	NA	NA	NA	2.79	0.002	NA	31.2	25.8	NA	NA
			Range	<0.0002-	NA	<0.006-0.006	NA	<0.021-<0.01	NA	2.50-3.20	0.001-0.002	NA	28.8-33.0	23.3-29.0	<0.01-0.26	NA

Sample Location[c]	No. of Observ.	Type	Date	Thallium [b] (mg/l) Diss	Thallium [b] (mg/l) Total	Vanadium (mg/l) Diss	Vanadium (mg/l) Total	Zinc (mg/l) Diss	Zinc (mg/l) Total
Surface Water Samples									
Surface Water Standard:				**0.013**				**0.123**	
CCS-13	1	Surface	5/20/95	<0.040	<0.040	0.005	0.011	<0.002	0.015
CCS-14	1	Surface	5/20/95	<0.040	<0.040	0.006	0.009	<0.002	0.003
CCS-15	1	Surface	5/20/95	<0.040	<0.040	0.005	0.009	<0.002	0.004
CCS-16	1	Spring	5/20/95	<0.040	NA	0.004	NA	<0.002	NA
CCS-17	1	Surface	5/20/95	<0.040	<0.040	0.005	0.005	<0.002	<0.002
CCS-18	1	Surface	5/21/95	<0.040	<0.040	0.005	0.004	<0.002	<0.002
CCS-19	1	Surface	5/21/95	<0.040	<0.040	0.003	<0.003	<0.002	<0.002
CCS-20	1	Spring	5/23/95	<0.040	NA	<0.003	NA	<0.002	NA
CCS-21	1	Spring	5/23/95	<0.040	NA	<0.003	NA	<0.002	NA
Trenton Canyon Drainage									
TCS-01	5	Spring	Mean	NA	NA	NA	NA	NA	NA
			Range	<0.001-<0.040	NA	<0.003-0.004	NA	<0.004-0.004	NA
TCS-02	5	Surface	Mean	NA	NA	NA	NA	NA	0.010
			Range	<0.001-<0.040	<0.001-0.044	<0.003-<0.01	<0.003-0.005	<0.002-0.005	0.006-0.018
Valmy Deposit Area									
MSS-01	6	Spring	Mean	NA	NA	NA	NA	0.049	0.066
Mud Spg.			Range	<0.001-<0.040	<0.001-0.042	<0.003-0.005	<0.003-0.006	0.013-0.130	0.033-0.14
(64-16)									
ASS-01	6	Spring	Mean	NA	NA	NA	0.008	NA	**0.28**
(Ames)			Range	<0.001-<0.040	<0.001-0.045	<0.004-0.006	0.005-0.010	<0.002-0.052	0.020-0.038
Ground Water Samples									
Ground Water Standard:								**5.0**	
MW-1	1	Well	12/16/95	<0.001	<0.001	<0.004	0.012	0.068	0.18
MW-3	1	Well	12/16/95	<0.001	NA	0.005	NA	0.023	NA
CCRPW	5	Well	Mean	NA	NA	0.008	NA	NA	NA
			Range	<0.001-<0.040	NA	0.006-0.01	NA	<0.002-0.01	NA

Appendix E Summary of Surface, Spring and Ground Water Quality Data, Trenton Canyon Project. (Page 9 of 9)

Key to Table 4.2

Ground Water Standards:
0.05 Primary Standard
1 Secondary Standard

Surface Water Standards:
10 Standard shown is the lowest standard for that constituent from the beneficial uses shown in Table 4-1.

0.034 Shaded values exceed applicable standard.

NA	Constituent not analyzed.
Diss	Dissolved.
TDS:	Total Dissolved Solids
TSS:	Total Suspended Solids

a. Concentrations of dissolved antimony for samples collected through May 1995 may be subject to contamination from filters used in sample preparation. Dissolved concentrations that were reported as higher than the corresponding total concentrations have been changed in the table to the concentration reported for the total and flagged with an 'a'. Samples in which dissolved antimony was detected, but for which total analyses were not performed, are also flagged 'a' and should be considered questionable if less than 0.05 mg/l.

b. Samples collected prior to September 1995 were originally analyzed for this constitutent by Inductively Coupled Plasma, with some samples reported with detections near the reporting limit. Subsequent analyses of samples collected in September 1995 by Graphite Furnace Atomic Absorption showed no detection at lower detection limits. Therefore, data for samples collected before September 1995 that showed detection may be questionable and have not been shaded.

c. Sampling locations are shown on Plate 1; numbers in parentheses are BLM identification numbers for springs (where available)

See Appendix C for complete water quality data.

Appendix F

List of Agencies, Organizations, and Individuals Who Were Sent Copies of this FEIS

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List of Agencies, Organizations, and Individuals Who Were Sent Copies of this FEIS

Name/Contact	Organization
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R. Blain Andrus	
Peter Babin	Royal Gold, Inc.
Alice Baldrica	Historic Preservation Office
C. Barcomb	Commission for the Preservation of Wild Horses
Mike Baughman	Humboldt River Water Basin Authority
Laurie Baumann	Humboldt Sun
Mitchell Beauchamp	Pacific Southwest Bioservices
Mark Bennett	
Don Bleiwas	USDI/USGS
Diane Boeene	Phillips Petroleum
Carol Boughton	USDI/US Geological Survey
Roy Boyd	The Industrial Company
Ms. Donna Bradley, Resource Officer	USDI/Bureau of Indian Affairs
George Brown	
Honorable Richard Bryan	Attn: Brent Heberlee
Nevada Bureau of Mines	Western Field Operation Center
Julie Butler, Coordinator	Nevada State Clearinghouse/SPOC
George Conger	Newmont Gold Company
Harry Corley	MMS-RMP
Alan D. Cox	Homestake Mining Company
Jaak Daemen	Prof. and Chair, Dept. of Mining
Eric Daniels	Echo Bay Minerals Company, McCoy Mine
Carrie Dann	Western Shoshone Defense Project
Paul Davidson	Commissioner, Board of Pershing CC
Phillis Davis	USDI
Richard De Long	Environmental Management Associates
P.M. DeDycker & Assoc.	
David L. Deisley	Parsons, Behle, Latimer
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Mark Demuth	
James F. Devine	U.S. Geological Survey
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Paul Dobak	
Larry A. Drew	Manager-Environmental Services
Bill Durbin	Nevada Division of Minerals

APPENDIX F

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Elko County Library	Reference Department
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Cindy Emmons	
Environmental Management Association	
Environmental Review Coordinator	U.S. EPA Region IX
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LeRoy Etchegaray	
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Eureka County Commissioners	
Eureka Opera House	
Nancy Olmsted-Everingham	Shapiro Associates
David J. Farrel	U.S. EPA Region IX
Office of Environmental Policy (HEV-1)	Federal Highway Administration
Rick Fiddler	Western States Mineral Corporation
Russell A. Fields	Nevada Division of Minerals
Henry Filippini	Filippini Ranching Company
Dan and Eddyann Fillippini	Badger Ranch
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L.K. Freeman	Nevada Department of Conservation and Natural Resources
Jim French	Nevada Division of Wildlife
Friends of the Clearwater	
H. Paul Friesema	Institute for Policy Research
Thomas J. Fronapfel	Nevada Department of Transportation
Stuart Fuller	Phelps Dodge Corporation
John Gebhardt, Mining Biologist	Nevada Division of Wildlife
Jeanne Geselbracht	Office of Federal Activities
Getchell Gold - Getchell Mine	
Honorable James Gibbons	Congressman
Mike Glock	Nevada Department of Transportation
David Grimes	USDI/USGS
Adella Harding	Elko Daily Free Press
Corbin Harney	
Richard Heap	Nevada Division of Wildlife
Mr. Jerald N. Hepworth, Director	Environmental, Health and Safety Services
Harriet Hill (W-7-2)	United States Environmental Protection Agency
John Hillenbrand	United States Environmental Protection Agency
Bennie Hodges	Pershing County Water District

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Humboldt County Library	
Hycroft Mine	
Anne Irving, Staff Specialist	Nevada Dept. of Transportation, Right-of-Way Division
Fred Jackson	Tetra Tech, Inc.
Joe Jarvis	
Chris Jensen and Martin Hanson	Jamar Farms
Walter Johnson	
Tilman Jones	
Nancy Kang, Biologist	U.S. Army Corps of Engineers, Sacramento Dist.
Rusty Kiel	Manager, Lovelock Water District
Joe Kizis	Fairmile Gold Corporation
Andreas Knudsen	International Work Group for Indigenous Affairs
Linda Koep	Hecla Mining
Paul Krzych	Dynamic Corp. Environmental Services
Rory Lamp	Nevada Division of Wildlife
Lander County Commissioners	
Lander County Library	
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Library of Congress Madison Building	Exchange and Gift Division
Robert G. Lopes	United Association of Plumbers and Pipefitters - Local #350
Charlene Lopez	Graystone
Meg MacDonald	WESTEC
Tammy Manzini	County Commission Assistant Stationed in Austin, NV
Honorable John Marvel, State Assemblyman	Legislative Building, Room 3107
Will Mattly	Lander Cty. DA
Jack Mattox	Southwest Center for Biological Diversity
Maxim Technologies, Inc.	
Cynthia May	Independence Mining Company
Kent McAdoo	Wildlife Society
Joe McFarland	USDI/Bureau of Land Management
Gary G. McGill	
Robert McQuivey	Habitat Division, NDOW
Carlos Mendoza, EIS Reviewer	U.S. Fish and Wildlife Service
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Dr. Glenn Miller	Sierra Club
Governor Bob Miller	State Capitol Bldg.

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John Milton III	Board of Humbolt Cnty. Commissioners
Branch of Mineral Assessment	Bureau of Mines
Offshore Environmental Assessment Division	Minerals Management Service
James D. Morefield	Nevada Natural Heritage Program
Dale Morlock	USDI/National Park Service (2310)
Allen Moss	
Pierre Mousset-Jones	UNR Department of Mining Engineering
Tom Myers	Great Basin Mine Watch
Maud Naroll	Nevada State Clearinghous
Division of Environmental Compliance (762)	National Park Service
Environmental Quality Division 774	National Park Service
Commander	National Training Center
Nevada Cattlemen's Association	
Department of Transportation	Environmental Division
Nevada Div. of Environmental Protection	Bureau of Mining Regulation and Reclamation
Division of State Lands	Capitol Complex
State Engineer	Division of Water Resources
Nevada Woolgrower's Association	
Nye County Planning Department	
Jim Nyenhuis	
Management Information Unit	Office of Federal Activities
Jack C. Orr, Chairman	Western Shoshone Resources Inc.
Ms. Maggie Parhamovich	University of Nevada Las Vegas
Jeff Parshley	Steffen Robertson and Kirsten
Kenneth Paulsen	
Steve Paulson	
Pershing County Commissioners	
Pershing County Library	
Craig Plummer	NRCS Rangeland Mgmt./Resource Specialist
John Pritcher	
Richard Radford	
Claudette Ramos, Band Chair	Battle Mountain Band of the Te-Moak Tribe of Western Shoshone
Michael Reed	Bald Mountain Mine
Honorable Harry Reid	Federal Building
Honorable Dean Rhoads, State Senator	Legislative Building
Trish Riley	U.S. Geological Service
Paul Robinson	SWRIC
Pat Rogers	Newmont Gold Company

APPENDIX F

List of Agencies, Organizations, and Individuals Who Were Sent Copies of this FEIS

Name/Contact	Organization
Ray Salisbury	
Deloyd Satterthwaite	Ellison Ranching Company
Paul Scheidig	Nevada Mining Association
William D. Schrand	NGMI - Sleeper Mine
Alan Septoff	Mineral Policy Center
Christopher Sewall	Western Shoshone Defense Project
Chris Shaw	People for the USA
Steve Siegel	
Carl Slagowski	Slagowski Ranch
Christine Smith	
Mike Smith	Sage Engineering
Chief, Planning Division	South Pacific Division
Department of Museums, Library and Arts	State Historic Preservation Office
State of Nevada	Dept. of Conservation & Natural Resources
State of Nevada	
State Planning Coordinator	State of Nevada, Dept. of Administration
Roger Steininger	
Neil Stevens	Eureka County School District Superintendent
Debra W. Struhsacker	
Dr. Daniel Suman	University of Miami
Paul Summers	BLM, National Applied Resource Science Ctr.
Kevin Sur	
Sharon Sweeney	
Edward S. Syrjala	
Danny L. Taylor, Assistant Dean	Mackay School of Mines
Te-Moak Bands of Western Shoshone	
Charles Thomas	
Rachel Thomas	
Joe Tingley	Nevada Bureau of Mines and Geology
Kim Townsend	
Jim Trent	State of Nevada, Bureau of Mining Regulation and Reclamation
Al Trippel	Battle Mountain Gold Company
HQ-USAF/LEEV	Environmental Division
Office of the Deputy A/S of the USAF	Environment, Safety, Occupational Health
Regulatory Section	U.S. Army Corps of Engineers
Office of Environmental Compliance (EH-23)	Department of Energy
Chief, USDI/Office of Surface Mining	Division of Environmental and Economic Analysis
U.S. Department of the Interior - WO-320	
Chief, Division of Environmental Coordination	U.S. Fish and Wildlife Service

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Name/Contact	Organization
Environmental Affairs Program	U.S. Geological Survey
John H. Uhalde	
University of Nevada	Gund Ranch
USDA, Forest Service	Santa Rosa Ranger District
USDI Bureau of Land Management	Carson City Field Office
USDI Bureau of Land Management	Cedarville Field Office
USDI Bureau of Land Management	Elko District
USDI Bureau of Land Management	Elko Field Office
USDI Bureau of Land Management	Ely Field Office

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